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THE RELATIONSHIP OF READING AND SPELLING  
ABILITY AT VARIOUS SCHOOL LEVELS

being

A thesis presented to the Graduate Faculty  
of the Fort Hays Kansas State College in  
partial fulfillment of the requirements for  
the Degree of Master of Science

by

Robert C. Richards, B.S.

Fort Hays Kansas State College

Date

July 27, 1948

Approved

Robert T. McQuath  
Major Professor

F. J. Jackson  
Chairman Graduate Council

# ACKNOWLEDGMENTS

The writer wishes to express appreciation to Dr. Robert T. McGrath, under whose supervision and guidance this thesis was prepared, for his assistance, suggestions and constructive criticisms. An acknowledgment must be made to Miss Lillian Bailey, County Superintendent of Ellsworth county and to the many teachers and administrators of the schools of Ellsworth county who cooperated in this study and made this paper possible.

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## CHAPTER I

## INTRODUCTION

For many years spelling and reading abilities have been recognized as fundamental skills necessary for successful living and further enlightenment. In the schools of yesterday, which accentuated the acquisition and mastery of learning tools by constant and monotonous drill, reading and spelling abilities were of paramount importance, especially in determining the progress of the child through the common school.

The relationship of reading abilities and spelling has attracted considerable interest among educators and educational psychologists for many years. Measurement and analysis of reading abilities were undertaken before the turn of the century and continue to the present. Spelling ability has been measured in a scientific manner since the development of reliable measuring scales during the earlier years of this century. Several valid and reliable measuring instruments have been developed for this purpose. This study makes use of these instruments and also makes a comparison of the skills these instruments measure.

Current emphasis in spelling and reading appears to be on the unitary nature of the child's development especially in relation to the language arts. While the writer is interested in the analysis of reading abilities and spelling ability in order to determine the fundamental language abilities common to both skills;

the specific problem of this investigation is to, "discover the consistency of the relationship of spelling and reading abilities of pupils from the fifth grade through the ninth grade inclusive". This relationship refers to the linear correlation relationship derived from the use of standardized tests. The particular phases of the general problem to which special attention is directed are: (1) Is the development in reading ability and spelling ability parallel throughout these various grade levels? (2) How does this relationship on one level compare with the relationship on the next higher level? (3) Does the relationship change with children of different mental ages? (4) Is this relationship a constant or a variable as between different school systems?

The groundwork of the present investigation is found in numerous investigations and studies. The major portion of related or similar work has been done in recent years. However Gates, especially concerned with disability cases, comments as follows in 1922:<sup>1</sup>

Reading and spelling are substantially correlated with scores representing a composite of verbal abilities. The justification of applying the term "general intelligence" to such a composite is the fact that achievement in school work and in many vocations and social adjustments is also substantially correlated with such verbal abilities.

After the data has been presented in Gates' investigation, the comment is: ". . . The correlation between reading and spelling has been found continually to be high."

---

1. A. I. Gates, The Psychology of Reading and Spelling (New York: Teachers College, Columbia University, 1922), p. 16.



Again, Russell<sup>2</sup> is concerned with the relationship of reading abilities and spelling ability. The correlation coefficient of reading comprehension and spelling as given from his data was eighty-four hundredths as computed by the product-moment method. The correlation of spelling and reading speed was sixty-six hundredths as determined from the same study. Russell states: "Definite improvement in one ability may affect spelling ability favorably."

Almost contrariwise, Gilbert and Gilbert<sup>3</sup> infer the possibility that mastery of spelling through reading may interfere with reading comprehension. Their study records the eye-movement during reading and its effect on improvement in spelling.

Mursell<sup>4</sup> comments as follows:

Reading like spelling, also depends upon looking at the printed page. But the reader looks in a different manner from that required to build spelling ability. Does practice in reading help or hinder spelling? As far as we know, the answer is that it has comparatively little effect either way. If anything it may help for there is some tendency for good readers to be good spellers also.

While most research substantiates the accepted high correlation between reading abilities and spelling ability; occasionally evidence casts a shadow of doubt as to the exact nature of this

2. David H. Russell, "Spelling Ability in Relation to Reading and Vocabulary Achievement," Elementary English Review, 23:32-37, January, 1946.

3. C. Gilbert and D. W. Gilbert, "Improvement of Spelling Through Reading, Bibliography", Journal of Educational Research, 37:458-63, February, 1944.

4. J. L. Mursell, "Downing A Bogey", Business Education World, 22:200, November, 1941.

relationship. Recently Bell<sup>5</sup> came forth with the following statement:

Although in general the good reader is also a good speller, a study of the reading and spelling test scores of incoming freshman reveals that many students who do well in reading do very poorly in spelling tests.

Indications are that investigators, for most part, agree that spelling ability and reading abilities are closely related. The variations in the results of studies made and in the opinions of researchers show the need for further study of the relationship.

#### Method and Procedure

This study is dependent upon accurate measurement of spelling and reading abilities. Although there are many reliable and accurate tests available to measure these abilities, the writer selected the following ones: (1) Modern School Achievement Tests,<sup>6</sup> specifically the spelling and reading test from this battery; (2) The Iowa Silent Reading Test;<sup>7</sup> and (3) The California Mental Maturity Test.<sup>8</sup> The main reason for selecting these specific measuring devices was that they measure at the levels of interest in this investigation without changing form.

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5. J. W. Bell, "Spelling at the High School Level," American School Board Journal, 112:30-1, February, 1946.

6. Modern School Achievement Test, Teachers College, Columbia University, New York.

7. Iowa Reading Test, Iowa University.

8. California Mental Maturity Test.

Nearly one hundred cases at each school level of interest in investigation furnish the data. All pupils were subjected to the spelling and reading phases of the Modern School Achievement battery test during the school term. These tests were administered by the class-room teacher. Extreme care was taken to maintain uniformity of conditions and to follow instructions as set forth in the test itself and in the Teacher's Check-off Sheet (Appendix A).

During the same school term some of these cases, at each of the five levels, were subjected to mental tests some of which were used in this study as a control measure.

The problems that arose in the study were many and not always simple. For example the complete cooperation of the teachers administering the test had to be obtained, and a convenient time for giving the tests and checking them had to be arranged. Since this study includes pupils at different school levels and involves several different schools, it was not possible to administer all of the tests at the same time during the school term. Although precautions were taken to properly inform the administrators of the tests, several errors were found and many of the tests had to be completely rechecked by the writer.

The check-off list (Appendix A) provides a degree of effort to insure against the usual mistakes in administering standardized tests. The check-off list with the regular instruction sheet to some extent informed each teacher giving the tests.



## CHAPTER II

## FINDINGS IN RELATIONSHIPS

The title of Chapter II indicates relationships of interest, while the preceding chapter describes briefly the manner in which these relationships were obtained.

The pages which follow contain the tabulated scores of pupils at various school levels. These scores were obtained by using the Modern School Achievement Test in parts as follows, Reading Comprehension, Reading Speed and Spelling authorized by Gates, Mort, et al., published at Teachers College, Columbia University.

The scores for the different school levels are tabulated separately; furthermore, the scores for each school appear in separate tables. The separate schools are designated in the thesis as Alpha, Beta, Gamma etc. The identity of the schools so designated is revealed in Appendix B.

The tables run in series of threes. Each series designated as Ia, Ib, Ic, IIa, IIb, IIc, etc. The first table of each series shows the relationship of Reading Comprehension and Spelling. The second table of the series is the correlation table for Reading Speed and Spelling, while the third table of each series shows the relationship of Reading Comprehension to Reading Speed. There are three correlation coefficients shown for each level in each school. These coefficients are: Reading Comprehension with Spelling,

Reading Speed with Spelling and Reading Comprehension with Reading Speed.

Some variation of the correlation coefficients occur between schools and from level to level within a given school as well as between schools. This variation in the coefficient from level to level is the primary concern of this thesis. The correlation of the scores in each table is computed by use of the Pearson Formula.

Table Ia, page nine is explained in the following manner. The first column of numerals, Table Ia, indicates the individuals in that class or group in one, two, three order. The score made by a given pupil in Reading Comprehension appears opposite this numeral in the second column headed "Reading Comprehension". The third column of this table is designated, "Reading Comprehension Deviation," and is the deviation of a pupil's score from the arithmetic means for the group which makes up said table. The fourth column is self explanatory from the caption, "Reading Comprehension Deviation Squared". This column is simply the square of the deviations that appear in column three. The square of the deviation has no significance except as it is used in obtaining the standard deviation for use in the correlation formula.

The fifth column in the table, and in the first table of each series of three, records the score made by each individual in the spelling test. This column is labeled "Spelling score". The sixth column, like the third is the deviation, positive or negative from the mean score for the group in the test designated. The seventh

column lists the squares of the deviation and the eighth column the product of the deviations. The only significance of this product of the deviations is as it affects the computation of the coefficient of correlation between the two sets of scores.

The formula used in the computation of the coefficient is,  $r = \frac{S_{xy}}{N D_1 D_2}$ . A brief explanation of the formula follows: rho or "r" equals the coefficient of correlation,  $S_{xy}$  the sum of the products of the deviations,  $N$  the number of scores, while  $D_1$  and  $D_2$  represent the respective standard deviations.

Table Ia yields the scores for the attainment level of five and four-tenths in the Alpha school in the school subjects of "Reading Comprehension" and "Spelling". The correlation coefficient of these test scores in this group of pupils is eighty hundredths.

3	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
4	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
5	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
6	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
7	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
8	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
9	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
10	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
11	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
12	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
13	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
14	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
15	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
16	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
17	5.0	4.0	25.00	20.0	-1.0	-2.0	2.00
			<u>45.75</u>				<u>22.75</u>
							<u>22.75</u>



TABLE Ia

## READING COMPREHENSION AND SPELLING

Alpha School

Level - - 5.4

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling	Spelling Deviation	Spelling Deviation Squared	Product of Deviation
1	4.0	-1.8	3.24	2.4	-1.6	2.56	2.88
2	5.8	-0.05	0.0025	4.8	0.8	0.64	-0.04
3	8.5	2.7	7.3	5.6	1.6	2.56	4.32
4	7.2	1.4	1.96	4.4	0.4	0.16	0.56
5	5.8	0.0	0.0	3.7	-0.3	0.09	- -
6	6.4	0.6	0.36	4.0	0.0	0.0	- -
7	3.4	-2.4	5.76	2.5	-1.5	2.25	3.6
8	6.7	0.9	0.81	5.1	1.1	1.21	0.98
9	4.2	-1.6	2.56	3.7	-0.3	0.09	0.48
10	6.5	1.7	2.89	4.6	0.6	0.36	1.02
11	6.8	1.0	1.	5.5	1.5	2.25	1.5
12	4.7	-1.1	1.21	3.8	-0.2	0.04	0.22
13	3.9	-1.9	3.61	2.3	-1.7	2.89	3.23
14	7.5	1.7	2.89	5.4	1.4	1.96	2.38
15	7.0	1.2	1.44	4.1	0.1	0.01	0.12
16	5.5	-0.3	0.09	2.1	-1.0	3.61	0.57
17	5.5	-0.3	0.09	3.8	-0.2	0.04	0.06
			<u>35.21</u>			<u>20.72</u>	<u>21.88</u>

 $D_1 - - 1.44$  $D_2 - - 1.10$  $\rho - - 0.80$

Table Ia yields a correlation coefficient of eighty-hundredths which is in agreement with that found in some of the literature. While there is considerable difference between the highest and the lowest scores made in the Reading Comprehension tests the range of scores in Spelling is not nearly as great. Perhaps this is normal performance since learning in spelling comes more from the direct teaching of that subject in the lower elementary grades. The range in the Reading Comprehension scores is wide beginning at three and four-tenths which is four-tenths of the way through the third grade, to eight and five-tenths which is at a point one-half of the way through the eighth school year. This range definitely raises a problem for any teacher handling such a group. The difference in achievement being so wide that any lesson assignment easy enough for the lowest individual would probably be far too easy to hold the interest of the individual ranking highest in achievement. A unique characteristic to be noted in this table is that the product of the deviations is in one case a negative number. This means that one individual ranked above the mean in one test and below in the other.

Table Ib portrays the relationship of Reading Speed to Spelling for the same group of pupils as in Table Ia. This correlation is unusually high, ninety-seven-hundredths.

TABLE Ib

## READING SPEED AND SPELLING

Alpha School

Level - - 5.4

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	3.2	-2.1	4.41	2.4	-1.6	2.56	3.36
2	4.6	-0.7	0.49	4.8	0.8	0.64	-0.56
3	8.0	2.7	7.29	5.6	1.6	2.56	4.32
4	5.9	0.6	0.36	4.4	0.4	0.16	0.24
5	6.6	1.3	1.69	3.7	-0.3	0.09	-0.39
6	5.9	0.6	0.36	4.0	0.0	0.0	- -
7	2.8	-2.5	6.25	2.5	-1.5	2.25	3.75
8	6.0	0.7	0.49	5.1	1.1	1.21	0.77
9	4.0	-1.3	1.69	3.7	-0.3	0.09	0.39
10	6.0	0.7	0.49	4.6	0.6	0.36	0.42
11	8.7	3.4	11.56	5.5	1.5	2.25	5.20
12	3.6	-1.7	2.89	3.8	-0.2	0.04	0.34
13	3.5	-1.8	3.24	2.3	-1.7	2.89	3.06
14	6.2	0.9	0.81	5.4	1.4	1.96	1.26
15	4.9	-0.4	0.16	4.1	0.1	0.01	0.04
16	3.9	-1.4	1.96	2.1	-1.9	3.61	2.66
17	6.8	1.5	2.25	3.8	-0.2	0.04	-0.30
			<u>46.39</u>			<u>20.72</u>	<u>34.48</u>

 $D_1 - - 1.66$  $D_2 - - 1.10$  $\rho - - 0.97$

Table Ib pictures the relationship of Reading Speed to Spelling for the pupils in Alpha School at the level of five and four-tenths which is four-tenths of the way through the fifth grade. The relationship in this case is rather high as compared with similar relationships found later in this study. Probably one obvious explanation of this high relationship is the fact that the group contains several pupils who made quite low scores in both tests. This yields a high product of deviations and naturally increases the correlation coefficient considerably. Table Ib is typical in that there are cases of negative deviation in one test with a positive deviation in the other test by the same individual. The range in reading speed scores is very wide spreading through five and nine-tenths grade levels, from two and eight-tenths to eight and seven-tenths.

Table Ic which follows is the third in the series and the last one of this group of pupils. It shows the relationship of Reading Comprehension and Reading Speed.

9	6.2	-2.5	2.35	-2.0	-2.1	2.44	2.04
10	6.3	2.7	2.92	2.0	2.7	2.49	2.27
11	6.8	1.0	1.0	0.7	3.4	11.56	2.59
12	4.7	-1.1	1.21	2.0	-1.7	2.89	1.27
13	3.9	-2.5	2.44	1.5	-1.5	2.25	2.02
14	7.5	1.2	2.24	6.3	5.6	3.14	2.33
15	7.0	-1.2	1.44	4.9	-3.1	9.61	4.41
16	5.5	-0.3	0.09	3.4	-2.4	5.76	0.12
17	2.9	-4.2	17.64	2.2	2.5	6.25	11.41
			12.11			15.39	20.51

$$D_1 = -1.46$$

$$D_2 = -1.66$$

$$r = -.75$$



TABLE Ic

## READING COMPREHENSION AND READING SPEED

Alpha School

Level - - 5.4

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	4.0	-1.8	3.24	3.2	-2.1	4.41	3.78
2	5.8	-0.05	0.002	4.6	-0.7	0.49	0.04
3	8.5	2.7	7.3	8.0	2.7	7.29	7.29
4	7.2	1.4	1.96	5.9	0.6	0.36	0.84
5	5.8	- -	- -	6.6	1.3	1.69	- -
6	6.4	0.6	0.36	5.9	0.6	0.36	0.36
7	3.4	-2.4	5.76	2.8	-2.5	6.25	6.14
8	6.7	0.9	0.81	6.0	0.7	0.49	0.63
9	4.2	-1.6	2.56	4.0	-1.3	1.69	2.08
10	6.5	1.7	2.89	6.0	0.7	0.49	-1.19
11	6.8	1.0	1.0	8.7	3.4	11.56	3.40
12	4.7	-1.1	1.21	3.6	-1.7	2.87	1.87
13	3.9	-1.9	3.61	3.5	-1.8	3.24	3.42
14	7.5	1.7	2.89	6.2	0.9	0.81	1.53
15	7.0	-1.2	1.44	4.9	-0.4	0.16	0.48
16	5.5	-0.3	0.09	3.9	-1.4	1.96	0.42
17	5.5	-0.3	<u>0.09</u> 35.21	6.8	1.5	<u>2.25</u> 46.39	<u>-0.45</u> 30.63

 $D_1 - - 1.44$  $D_2 - - 1.66$  $\rho - - .75$

Table Ic is the last table of the first series of tables and also the last table dealing with the fifth grade in the Alpha School. This table shows the relationship of Reading Comprehension to Reading Speed for the group. The correlation coefficient for this relationship is seventy-five-hundredths.

The scores in Ic have been analysed in connection with the two preceding tables and the table merely compares the two sets of scores which were used in Table Ia and Table Ic to compare with Spelling.

The next series of tables pertains to a group of pupils in Alpha school, one school level more advanced. The treatment of the performance of this group is essentially the same in the preceding one but some difference is noticed in the resulting coefficients of correlation.

Table IIa which follows yields a very low coefficient of correlation, namely., thirty-six-hundredths which represents the relationship of Reading Comprehension scores to Spelling scores for a group of pupils at the level of Six and four-tenths in the Alpha School.



TABLE IIa

## READING COMPREHENSION AND SPELLING

Alpha School

Level - - 6.4

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	7.2	1.2	1.44	6.3	0.0	- -	- -
2	7.0	1.0	1.0	7.1	0.8	0.64	0.80
3	6.0	0.0	0.0	4.5	-1.8	3.24	- -
4	6.4	0.4	0.16	6.1	-0.2	0.04	-0.08
5	5.0	-1.0	1.00	6.4	0.1	0.01	-0.10
6	6.2	0.2	0.04	6.4	0.1	0.01	0.02
7	4.2	-1.8	3.24	5.7	-0.6	0.36	1.08
8	7.8	1.8	3.24	5.9	-0.4	0.16	-0.72
9	4.2	-1.8	3.24	5.9	-0.4	0.16	0.72
10	4.7	-1.3	1.69	6.7	0.4	0.16	-0.52
11	8.0	2.0	4.00	6.8	0.5	0.25	1.00
12	8.2	2.2	4.84	6.1	-0.2	0.04	-0.44
13	5.8	-0.2	0.04	5.6	-0.7	0.49	0.14
14	4.7	-1.3	1.69	4.3	-2.0	4.00	2.60
15	5.4	-0.6	0.36	5.1	-1.2	1.44	0.72
16	7.7	1.7	2.84	6.4	0.1	0.01	0.17
17	3.8	-2.2	<u>4.84</u>	5.5	-0.8	<u>0.64</u>	<u>1.76</u>
			33.66			11.65	6.43

 $D_1 - - 1.41$  $D_2 - - 0.83$  $\rho - - 0.36$

Table IIa does not show the correlation between Reading Comprehension and Spelling for this group that Table Ia shows for the lower group. The group is an unusual one in that there is little agreement between the deviations in Reading Comprehension and in Spelling. The coefficient thirty-six-hundredths is so low that it is hardly indicative of a significant relationship.

The fact that the correlation between Reading Speed and Spelling for this group is also unusually low indicates that the lack of agreement of the deviations is probably in the spelling scores. A close examination of the tables shows that this is the case.

The table which follows, Table IIb, shows the relationship between Reading Speed and Spelling for this group from the Alpha School at the level of six and four-tenths.

7	5.0	-2.0	2.50	3.7	-0.3	0.09	2.16
8	7.7	0.5	0.25	5.7	-0.4	0.16	-1.20
9	5.5	-2.2	4.84	3.7	-0.1	0.01	0.79
10	9.5	2.3	5.29	6.7	2.4	5.76	10.20
11	5.4	2.2	4.84	4.8	0.9	0.81	1.16
12	5.6	2.4	5.76	5.1	-0.2	0.04	-0.12
13	5.0	-1.0	1.00	3.8	-3.7	13.69	-1.32
14	5.0	-1.0	1.00	4.7	-3.9	15.21	-1.23
15	7.0	-0.2	0.04	5.1	-0.3	0.09	0.21
16	6.0	0.4	0.16	6.4	0.1	0.01	0.06
17	3.0	-0.2	0.04	5.3	-0.3	0.09	1.16
			<u>27.64</u>			<u>12.55</u>	<u>12.54</u>

$$D_1 = -1.95$$

$$D_2 = -0.66$$

TABLE IIb

## READING SPEED AND SPELLING

Alpha School

Level - - 6.4

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	8.0	0.8	0.64	6.3	0.0	0.0	- -
2	9.6	2.4	5.76	7.1	0.8	0.64	1.12
3	6.5	-0.7	0.49	4.5	-1.8	3.24	1.26
4	9.4	2.2	4.84	6.1	-0.2	0.04	-0.44
5	8.0	0.8	0.64	6.4	0.1	0.01	0.08
6	4.8	-2.4	5.76	6.4	0.1	0.01	-0.24
7	5.6	-1.6	2.56	5.7	-0.6	0.36	0.96
8	7.7	0.5	0.25	5.9	-0.4	0.16	-0.20
9	5.0	-2.2	4.84	5.9	-0.4	0.16	0.88
10	9.5	2.3	5.29	6.7	0.4	0.16	0.92
11	9.4	2.2	4.84	6.8	0.5	0.25	1.10
12	9.6	2.4	5.76	6.1	-0.2	0.04	-0.48
13	5.6	-1.6	2.56	5.6	-0.7	0.49	1.12
14	5.6	-1.6	2.56	4.3	-2.0	4.00	3.20
15	7.0	-0.2	0.04	5.1	-1.2	1.44	0.24
16	8.0	0.8	0.64	6.4	0.1	0.01	0.08
17	3.0	-4.2	<u>17.64</u>	5.5	-0.8	<u>0.64</u>	<u>3.36</u>
			65.11			11.65	12.96

 $D_1 - - 1.95$  $D_2 - - 0.68$

Rho, or the coefficient of correlation on Table IIb is forty-seven-hundredths. This coefficient is still low and may be ascribed to the lowness of the spelling scores while the reading scores remain normal. The disagreement of the deviations is unusual in that four cases out of the seventeen are negative deviation products. This means that one of the scores is above the mean while the other is below.

The next table IIc of this second series portrays the relationship of Reading Comprehension to Reading Speed. This relationship is more nearly normal for this unusual group. The Spelling scores, it should be noted, do not enter into this relationship. The correlation between Reading Speed and Reading Comprehension for this group at level six and four-tenths from the Alpha School is sixty-five hundredths.

	6.4	-1.2	3.24	5.6	-2.6	2.76	-1.24
7	6.2	-1.4	1.96	5.8	-2.4	2.72	-1.08
8	7.8	1.0	1.00	7.7	0.7	2.35	0.90
9	6.2	-1.2	1.44	5.9	-2.2	2.72	-1.08
10	6.7	-0.7	0.49	5.9	-2.2	2.72	-1.08
11	8.0	0.0	0.00	6.4	-1.2	2.76	-1.24
12	8.2	2.2	4.84	6.0	-1.6	2.76	-1.24
13	5.0	-2.2	4.84	5.0	-1.6	2.76	-1.24
14	6.7	-0.7	0.49	5.9	-2.2	2.72	-1.08
15	5.4	-0.6	0.36	7.0	-1.2	2.76	-1.24
16	7.7	1.7	2.89	8.0	0.0	0.00	0.00
17	3.0	-4.2	17.64	3.0	-4.2	17.64	17.64
			32.67			69.11	39.69

$$R_1 = -1.25$$

$$R_2 = -1.25$$

$$R_{12} = -0.95$$



TABLE IIc

## READING COMPREHENSION AND READING SPEED

Alpha School

Level - - 6.4

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	7.2	1.2	1.44	8.0	0.8	0.68	0.96
2	7.0	1.0	1.0	9.6	2.4	5.76	2.40
3	6.0	0.0	- -	6.5	-0.7	0.49	- -
4	6.4	0.4	0.16	9.4	2.2	4.84	0.88
5	5.0	-1.0	1.00	8.0	0.8	0.64	-0.80
6	6.2	0.2	0.04	4.8	-2.4	5.76	-0.48
7	4.2	-1.8	3.24	5.6	-1.6	2.56	1.88
8	7.8	1.8	3.24	7.7	0.5	0.25	0.90
9	4.2	-1.8	3.24	5.0	-2.2	4.84	3.96
10	4.7	-1.3	1.69	5.6	-1.6	2.56	12.99
11	8.0	2.0	4.00	9.4	2.2	4.84	4.40
12	8.2	2.2	4.84	9.6	2.4	5.76	5.25
13	5.8	-0.2	0.04	5.6	-1.6	2.56	0.32
14	4.7	-1.3	1.69	5.6	-1.6	2.56	2.08
15	5.4	-0.6	0.36	7.0	-0.2	0.04	0.12
16	7.7	1.7	2.84	8.0	0.8	0.64	1.36
17	3.8	-2.2	<u>4.84</u>	3.0	-4.2	<u>17.64</u>	<u>9.25</u>
			32.67				65.11
							29.49

 $D_1 - - 1.38$  $D_2 - - 1.95$  $\rho - - 0.65$

Table IIc is the third of the second series and the last table dealing with the group from Alpha School at the six and four-tenths level. The correlations between Reading comprehension and Reading Speed for this group is considerably higher than the correlation coefficients between Reading Comprehension and Spelling and that between Reading Speed and Spelling.

The next series of tables is concerned with a group at the school level of seven and nine-tenths or nearly a year and one-half more advanced in school than the group last presented. The first table of this series, Table IIIa shows the relationship of Reading Comprehension scores to Spelling scores. This group is a little larger, than the previous two groups in that twenty-three pupils were involved rather than seventeen.



TABLE IIIa

## READING COMPREHENSION AND SPELLING

Beta School

Level - - 7.9

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	5.5	-2.4	5.76	7.3	0.4	0.16	-0.96
2	7.5	-0.4	0.16	6.2	-0.7	0.49	0.28
3	8.5	0.6	0.36	7.2	0.3	0.09	0.18
4	8.7	0.8	0.64	7.8	0.9	0.81	0.72
5	9.7	1.8	3.24	9.0	2.1	4.41	3.78
6	9.1	1.2	1.44	9.1	2.2	4.84	2.64
7	7.7	-0.2	0.04	6.6	-0.3	0.09	0.06
8	8.4	0.5	0.25	7.2	0.3	0.09	0.15
9	9.2	1.3	1.69	7.4	0.5	0.25	0.65
10	6.8	-1.1	1.21	5.4	-1.5	2.25	1.65
11	9.0	1.1	1.21	7.3	0.4	0.16	0.44
12	6.5	-1.4	1.96	6.4	-0.5	0.25	0.70
13	4.2	-3.7	13.69	4.3	-2.6	6.76	9.62
14	7.5	-0.4	0.16	6.1	-0.7	0.49	0.28
15	6.4	-1.5	2.25	5.7	-1.2	1.44	1.80
16	9.4	1.5	2.25	8.1	1.2	1.44	1.80
17	7.5	-0.4	0.16	9.3	0.4	0.16	0.16

TABLE IIIa (Continued)

18	6.8	-1.1	1.21	7.1	0.2	0.04	0.22
19	9.1	1.2	1.44	6.3	-0.6	0.36	0.72
20	9.5	1.6	2.56	6.9	0.0	- -	- -
21	5.5	-2.4	5.76	5.2	-1.7	2.89	4.08
22	9.5	1.6	2.56	8.7	1.8	3.24	2.88
23	9.2	1.3	<u>1.69</u>	7.0	0.10	<u>0.01</u>	<u>0.13</u>
			52.52			31.51	31.98

$$D_1 - - 1.5$$

$$D_2 - - 1.14$$

$$\rho - - 0.78$$

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Table IIIa is for the school level of seven and nine-tenths in the Beta School and gives the relationship between Reading Comprehension and Spelling with a coefficient of seventy-eight-hundredths. This coefficient is in fairly close agreement with Table Ia which shows a relationship at the five and four-tenths level of eighty-hundredths. One pupil in the group, number thirteen, shows a very low score in both Reading Comprehension and Spelling. Table IIIb compares Reading Speed and Spelling for this group. The correlation of the tests here again shows a definite relationship, the coefficient being seventy-four-hundredths. Several cases should be noted in this table in which there is a positive deviation from the mean in one test while in the other test there is a negative deviation from the mean for the group.

Table IIIc shows the relationship of Reading Comprehension to Reading Speed for the group which is not as high as might be expected. The relationship being fifty-two-hundredths. Here again several pupils were above the mean for the group on one test and below the mean on the other test.

TABLE IIIb

## READING SPEED AND SPELLING

Beta School

Level - - 7.9

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviation
1	9.5	0.80	0.64	7.3	0.4	0.16	0.32
2	9.4	0.70	0.49	6.2	-0.7	0.49	0.49
3	9.6	0.90	0.81	7.2	0.3	0.09	0.27
4	9.7	1.0	1.0	7.8	0.9	0.81	0.90
5	9.6	0.90	0.81	9.0	2.1	2.41	1.89
6	9.7	1.0	1.0	9.1	2.2	4.84	1.20
7	9.6	0.90	0.81	6.6	-0.3	0.09	-0.27
8	9.5	0.80	0.64	7.2	0.3	0.09	0.24
9	9.7	1.0	1.0	7.4	0.5	0.25	0.30
10	7.7	-1.0	1.0	5.4	-1.5	2.25	1.5
11	5.5	-3.2	10.24	7.3	0.4	0.16	-1.28
12	9.4	0.7	0.49	6.4	-0.5	0.25	-0.35
13	4.6	-4.1	16.81	4.3	-2.6	6.76	10.66
14	6.0	-2.7	7.29	6.1	-0.8	0.64	2.16
15	9.5	0.8	0.64	5.7	-1.2	1.44	-0.96
16	9.4	0.7	0.49	8.1	1.2	1.44	0.84
17	9.5	0.8	0.64	7.3	0.4	0.16	0.32
18	9.5	0.8	0.64	7.1	0.2	0.04	0.16
19	9.6	0.9	0.81	6.3	-0.6	0.36	0.54



TABLE IIIb (Continued)

20	9.0	0.3	0.09	6.9	0.0	--	--
21	6.0	-2.7	7.29	5.2	-1.7	2.89	4.59
22	9.4	0.7	0.49	8.7	1.8	3.24	1.26
23	9.2	0.5	$\frac{0.25}{54.37}$	0.7	0.1	$\frac{0.01}{31.51}$	$\frac{0.05}{25.33}$

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TABLE IIIc

## READING COMPREHENSION AND READING SPEED

Beta School

Level - - 7.9

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	5.5	-2.3	5.29	9.5	0.8	0.64	-1.84
2	7.5	-0.3	0.09	9.4	0.7	0.49	-0.21
3	8.5	0.7	0.49	9.6	0.9	0.81	0.63
4	8.7	0.9	0.81	9.7	1.0	1.0	0.90
5	9.7	1.8	3.24	9.6	0.9	0.81	1.62
6	9.1	1.3	1.69	9.7	1.0	1.0	1.30
7	7.7	-0.1	0.01	9.6	0.9	0.81	-0.09
8	8.4	0.6	0.36	9.5	0.8	0.64	0.48
9	9.2	1.4	1.96	9.7	1.0	1.0	1.4
10	6.8	-1.0	1.0	7.7	-1.0	1.0	1.0
11	9.0	1.2	1.44	5.5	-3.2	10.24	-3.84
12	6.5	-1.3	1.69	9.4	0.7	0.49	0.91
13	4.2	-3.6	12.96	4.6	-4.1	16.81	14.76
14	7.5	-0.3	0.09	6.0	-2.7	7.29	0.81
15	6.4	-1.4	1.96	9.5	0.8	0.64	1.12
16	9.4	1.6	2.56	9.4	0.7	0.49	1.12
17	7.5	-0.3	0.09	9.5	0.8	0.64	-0.24

TABLE IIIc (Continued)

18	6.8	-1.0	1.0	9.5	0.8	0.64	-0.80
19	9.1	1.3	1.69	9.6	0.9	0.81	1.17
20	9.5	1.7	2.56	9.0	0.3	0.09	0.51
21	5.5	-2.3	5.29	6.0	-2.7	7.29	6.21
22	9.5	1.6	2.56	9.4	-0.7	0.49	1.12
23	9.2	1.3	<u>1.69</u>	9.2	0.50	<u>0.25</u>	<u>0.65</u>
			50.52			54.37	28.69

from the standardized grade level table for the Madison School Achievement Test.

The six cases in which a negative product of deviation scores deserve further study. In the case of pupil number one and pupil number eleven one where is below the mean and one above, the product of deviation are high and negative. This type of trend markedly lowers the correlation of the tests for this group. Pupil number one is low in Reading Comprehension and high in Reading Speed. Notice the case of pupil number eleven wherein the scores are the reverse of pupil number one. Again in this table pupil number thirteen is unusually low in both tests. This is the same pupil discussed in connection with Table IIIa since this table pertains to one other test, namely, that of Reading Speed. After investigating, this pupil was found to be definitely classified as a problem pupil with limited language abilities and over-age for the group even with his low showing in achievement.

Table IIIc yields a  $D_1$  value of one and five-tenths while the  $D_2$  value is one and six-tenths, the resulting correlation coefficient of fifty-two-hundredths shows some agreement between the scores made in the Reading Comprehension test and the scores made in the Reading Speed test. This agreement is not as pronounced as for different groups that are used in this study. There are many individuals ranking high in the Reading Speed test. This may be due to incorrect timing or to the group being an exceptional one. The scores above nine are derived by an extension of the standardized table while all the scores recorded as nine or below are taken from the standardized grade level table for the Modern School Achievement Tests.

The six cases in which a negative product of deviation occurs deserve further study. In the case of pupil number one and pupil number eleven one score is below the mean and one above, the products of deviation are high and negative. This type of product markedly lowers the correlation of the tests for this group. Pupil number one is low in Reading Comprehension and high in Reading Speed. Notice the case of pupil number eleven wherein the scores are the reverse of pupil number one. Again in this table pupil number thirteen is unusually low in both tests. This is the same pupil discussed in connection with Table IIIa since this table pertains to one other test, namely, that of Reading Speed. After investigating, this pupil was found to be definitely classified as a problem pupil with limited language abilities and over-age for the group even with his very low showing in achievement.



The following tables IVa, b, and c, are concerned with pupils at the highest level investigated. This group is also from Beta School and was nine-tenths of the way through the eighth grade at the time the test was administered. Table IVa yields the relationship of Reading Comprehension to Spelling; Table IVb shows the relation of Reading Speed to Spelling while the third of the series, Table IVc shows the relationship of Reading Comprehension to Reading Speed for this group.

Table IVa shows the relationship between Reading Comprehension and Spelling is seventy-two-hundredths for this group of pupils nine-tenths of the way through the eighth grade. The two tables IVb and IVc show additional relationships of test scores for this same group of nineteen pupils which has nearly completed the first eight years of school work. The first table concerned with this group shows two individuals are very low in both the Reading Comprehension and the Spelling tests. These pupils, listed as number fifteen and number seventeen are from one and one-half to two grade levels below the mean for the group. The spelling score of pupil number fifteen is three and one-half grade levels below that level achieved by pupil number four, which was the highest achievement in spelling made in this group. The score of pupil number seventeen in Reading Comprehension is two and one-tenths levels below the mean for the group and three and three-tenths levels below the highest achievement for the group, namely, that of thirteen.

TABLE IVa

## READING COMPREHENSION AND SPELLING

Beta School

Level - - 8.9

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	9.1	0.6	0.36	9.4	1.3	1.69	1.01
2	9.5	1.0	1.0	9.1	1.0	1.0	1.0
3	7.8	-0.7	0.49	6.1	-0.2	4.0	1.40
4	9.3	0.8	0.64	9.5	1.4	1.96	1.12
5	9.6	1.1	1.21	9.2	1.1	1.21	1.21
6	8.4	-0.1	0.01	7.0	-1.1	1.21	0.11
7	9.2	0.7	0.49	8.1	0.0	- -	- -
8	9.1	0.6	0.36	7.0	-1.1	1.21	-0.66
9	9.1	0.6	0.36	9.1	1.0	1.0	0.60
10	8.8	0.3	0.09	9.4	1.3	1.69	0.39
11	9.4	0.9	0.81	8.7	0.6	0.36	0.54
12	8.4	-0.1	0.01	8.1	0.0	- -	- -
13	9.7	1.2	1.44	7.8	-0.3	0.09	-0.36
14	7.5	-1.0	1.0	7.2	-0.9	0.81	0.90
15	6.8	-1.7	2.89	6.0	-2.1	4.41	3.57
16	7.0	-1.5	2.25	9.1	1.0	1.00	-1.5
17	6.4	-2.1	4.41	6.7	-1.4	1.96	2.94
18	9.6	1.1	1.21	9.2	1.1	1.21	1.21
19	7.0	-1.5	2.25	6.4	-1.7	2.89	2.55
			21.28				27.70
							17.38

 $D_1 - - 1.06$  $\rho - - 0.72$  $D_2 - - 1.2$

TABLE IVb

## READING SPEED AND SPELLING

Beta School

Level - - 8.9

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	9.4	1.3	1.69	9.3	1.3	1.69	1.69
2	9.1	1.0	1.0	9.1	1.0	1.0	1.0
3	6.0	-2.1	4.41	6.1	-2.0	4.0	4.20
4	9.7	1.6	2.56	9.5	1.4	1.96	2.24
5	9.5	1.4	1.96	9.2	1.1	1.21	1.54
6	7.7	-0.4	0.16	7.0	1.1	1.21	0.44
7	9.5	1.4	1.96	8.1	0.0	- -	- -
8	7.7	-0.4	0.16	7.0	-1.1	1.21	0.44
9	9.4	1.3	1.69	9.1	1.0	1.0	1.30
10	9.0	0.9	0.81	9.4	1.3	1.69	1.17
11	8.0	-0.1	0.01	8.1	0.0	- -	- -
12	8.0	-0.1	0.01	8.7	0.6	0.36	-0.06
13	9.5	1.4	1.96	7.8	-0.3	0.09	-0.42
14	7.7	-0.4	0.16	7.2	-0.9	0.81	0.36
15	4.8	-3.3	10.89	6.0	-2.1	4.41	6.93
16	6.8	-1.3	1.69	9.1	1.0	1.0	-1.30
17	6.5	-1.6	2.56	6.7	-1.4	1.96	2.24
18	8.0	-0.1	0.01	9.2	1.1	1.21	-0.11
19	7.0	-1.1	<u>1.21</u>	6.4	-1.7	<u>2.89</u>	<u>1.87</u>
			34.90			27.70	23.53

 $D_1 - - 1.35$  $D_2 - - 1.2$  $\rho - - 0.77$

TABLE IVc

## READING COMPREHENSION AND READING SPEED

Beta School

Level - - 8.9

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Square	Product of Deviations
1	9.1	0.6	0.36	9.4	1.3	1.69	0.78
2	9.5	1.0	1.0	9.1	1.0	1.0	1.0
3	7.8	-0.7	0.49	6.0	-2.1	4.41	1.47
4	9.3	0.8	0.64	9.7	1.6	2.56	1.28
5	9.6	1.1	1.21	9.5	1.4	1.96	1.54
6	8.4	-0.1	0.01	7.7	0.4	0.16	0.04
7	9.2	0.7	0.49	9.5	1.4	1.96	0.98
8	9.1	0.6	0.36	7.7	0.4	0.16	0.24
9	9.1	0.6	0.36	9.4	1.3	1.69	0.78
10	8.8	0.3	0.09	9.0	0.9	0.81	0.27
11	9.4	0.9	0.81	8.0	-0.1	0.01	0.09
12	8.4	-0.1	0.01	8.0	-0.1	0.01	0.01
13	9.7	1.2	1.44	9.5	1.4	1.96	1.68
14	7.5	-1.0	1.00	7.7	-0.4	0.16	0.40
15	6.8	-1.7	2.89	4.8	-3.3	10.89	5.61
16	7.0	-1.5	2.25	6.8	-1.3	1.69	1.95
17	6.4	-2.1	4.41	6.5	-1.6	2.56	3.36
18	9.6	1.1	1.21	8.0	-0.1	0.01	-0.11
19	7.0	-1.5	<u>2.25</u>	7.0	-1.1	<u>1.21</u>	<u>1.65</u>
			21.28			34.90	23.02

 $D_1 - - 1.06$  $D_2 - - 1.35$  $\rho - - 0.85$



The unique feature about table IVb is that the mean for both the Reading Speed and the Spelling is eight and one-tenth. This means that the mean level of achievement in reading Speed and in Spelling is nearly identical. The arithmetic mean for Reading Comprehension for this group is slightly higher being eight and five-tenths. The closeness of these means indicates a rather parallel development.

From Table IVb the test score shows pupil number fifteen to be a very slow reader and the scores made in Spelling and Reading Comprehension are also low. Probably the implication from the relative scores is that slowness of reading causes trouble in the other school work. In the case of this pupil the suspected cause is an eye defect or a detrimental reading habit. Table IVc has one other individual having trouble of a similar nature. This pupil is number nineteen who is above the mean in Reading Comprehension while below the mean in Reading Speed.

The three tables which follow, Table Va, b, and c show the relationships for a group of thirty-four pupils from Gamma School at the five and two-tenths level, two-tenths of the way through the fifth school year. This group is the largest presented in this study at this level.

The mean score for the group in Reading Comprehension is five and seven-tenths; the mean in Spelling is five and eight-tenths and the mean for the group in Reading Speed is five and three-tenths. The mean for Speed is somewhat lower than the other two means but is still one-tenth of a grade level above the actual level arrived at when the tests were administered.

The close agreement between the means for this group may be predictive of a high correlation between the tests. The correlation coefficient found for Table Va means, however, that the Reading Comprehension and Spelling do not have a very high degree of relationship in this group. The coefficient is forty-three-hundredths which is not much more than a chance relationship.

Likewise the coefficient of correlation for Reading Speed and Spelling is low for the group. The coefficient is forty-six-hundredths; this agrees, to some extent, with the coefficient between Reading Comprehension and Spelling. The meaning of this phenomenal situation is not apparent, but a conjecture that the unusual situation might be answered by an inspection of the Spelling scores, bears fruit. The writer personally checked all of the tests and the scoring of them for this group and for the three large groups following this one. The Spelling scores for this group do not deviate very far from the mean. There are six pupils in this group of thirty-four who were above the group mean in one subject and below in the other. The reason for this unusual situation in Spelling might be due to an intensive drill program and a Spelling consciousness in this group of pupils.

Table Vc of this series indicates that the coefficient of correlation between Reading Comprehension and Reading Speed for this group is sixty-eight-hundredths. This is higher by more than two-tenths than the figure found for the other two tables. There are eleven pupils in this group of thirty-four that are above the mean in one test and below in the other. The deviations from the mean are for the most part small, however, and this appears to be one of the most homogeneous groups investigated.

TABLE Va

## READING COMPREHENSION AND SPELLING

Gamma School

Level - - 5.2

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	8.3	2.6	6.76	6.5	0.7	0.49	1.82
2	5.4	-0.3	0.09	5.6	-0.2	0.04	0.06
3	6.6	0.9	0.81	5.5	-0.3	0.09	-0.27
4	3.9	-1.8	3.24	5.8	0.0	- -	- -
5	4.9	-0.8	0.64	6.7	0.9	0.81	-0.72
6	5.6	-0.1	0.01	6.7	0.9	0.81	-0.09
7	8.2	2.5	6.25	5.5	-0.3	0.09	-0.75
8	6.2	0.5	0.25	5.2	-0.6	0.36	-0.30
9	6.0	0.3	0.09	6.6	0.8	0.64	0.24
10	6.2	0.5	0.25	5.2	-0.6	0.36	-0.30
11	3.9	-1.8	3.24	5.1	-0.7	0.49	1.26
12	6.5	0.8	0.64	6.3	0.5	0.25	0.40
13	5.7	0.0	---	5.4	-0.4	0.16	- -
14	7.5	1.8	3.24	5.9	0.1	0.01	0.18
15	7.7	2.0	4.00	6.1	0.3	0.09	0.60
16	5.0	-0.7	0.49	4.7	-1.1	1.21	0.77
17	6.5	0.8	0.64	6.6	0.8	0.64	0.64
18	4.0	-1.7	2.89	5.4	-0.4	0.16	0.68

TABLE Va (Continued)

19	6.7	1.0	1.00	6.5	0.7	0.49	0.70
20	5.2	-0.5	0.25	5.2	-0.6	0.36	0.30
21	6.4	0.7	0.49	5.8	0.0	- -	- -
22	5.9	0.2	0.04	6.2	0.4	0.16	0.68
23	4.0	-1.7	2.89	6.0	-0.2	0.04	0.34
24	5.2	-0.5	0.25	5.7	-0.1	0.01	0.05
25	5.8	0.1	0.01	6.4	0.6	0.36	0.06
26	7.2	1.5	2.25	6.2	0.4	0.16	0.60
27	5.2	-0.5	0.25	5.2	-0.6	0.36	0.30
28	3.9	-1.8	3.24	4.8	-1.0	1.0	1.80
29	4.7	-1.0	1.0	5.2	-0.6	0.36	0.60
30	7.2	1.5	2.25	6.6	0.8	0.64	1.20
31	7.5	1.8	3.24	5.9	0.1	0.01	0.18
32	6.5	0.8	0.64	6.3	0.5	0.25	0.40
33	3.5	-2.2	4.84	5.6	-0.2	0.04	0.44
34	3.5	-2.2	<u>4.84</u> 61.01	4.6	-1.2	<u>0.44</u> 12.38	<u>2.64</u> 13.91

 $D_1 - - 1.35$  $D_2 - - 0.6$  $\rho - - 0.43$



TABLE Vb

## READING SPEED AND SPELLING

Gamma School

Level - - 5.2

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	8.9	3.6	12.96	6.5	0.7	0.49	2.52
2	4.5	-0.8	0.64	5.6	-0.2	0.04	0.16
3	3.8	-1.5	2.25	5.5	-0.3	0.09	0.45
4	3.9	-1.4	1.96	5.8	0.0	- -	- -
5	3.9	-1.4	1.96	6.7	0.9	0.81	-1.26
6	9.3	4.0	16.00	6.7	0.9	0.81	3.60
7	5.1	-0.2	0.04	5.5	-0.3	0.09	0.60
8	5.0	-0.3	0.09	5.2	-0.6	0.36	0.18
9	4.3	-1.0	1.00	6.6	0.8	0.64	0.80
10	4.6	-0.7	0.49	5.2	-0.6	0.36	0.42
11	2.8	-2.5	6.25	5.1	-0.7	0.49	1.75
12	5.1	-0.2	0.04	6.3	0.5	0.25	0.10
13	6.3	1.0	1.0	5.4	-0.4	0.16	-0.40
14	5.9	0.6	0.36	5.9	0.1	0.01	0.06
15	6.7	1.4	1.96	6.1	0.3	0.09	0.42
16	5.7	0.4	0.16	4.7	-1.1	1.21	-0.44
17	5.8	0.5	0.25	6.6	0.8	0.64	0.40
18	4.6	-0.7	0.49	5.4	-0.4	0.16	0.28

TABLE Vb (Continued)

19	5.5	0.2	0.04	6.5	0.7	0.49	0.14
20	5.9	0.6	0.36	5.2	-0.6	0.36	-0.36
21	5.2	-0.1	0.01	5.8	0.0	- -	- -
22	4.9	-0.4	0.16	6.2	0.4	0.16	-0.16
23	4.2	-1.1	1.21	6.0	0.2	0.04	-0.22
24	4.2	-1.1	1.21	5.7	-0.1	0.01	0.11
25	4.2	-1.1	1.21	6.4	0.6	0.36	-0.66
26	7.8	2.5	6.25	6.2	0.4	0.16	1.00
27	4.5	-0.8	0.64	5.2	-0.6	0.36	0.48
28	3.4	-1.9	3.61	4.8	-1.0	1.0	1.90
29	4.9	-0.4	0.16	5.2	-0.6	0.36	0.24
30	5.5	0.2	0.04	6.6	0.8	0.64	0.16
31	8.9	3.6	12.96	5.9	0.1	0.01	0.36
32	7.3	2.0	4.00	6.3	0.5	0.25	1.00
33	3.4	-1.9	3.61	5.6	-0.2	0.04	0.38
34	3.0	-2.3	$\frac{5.29}{88.66}$	4.6	-1.2	$\frac{1.44}{12.38}$	$\frac{2.76}{16.72}$

 $D_1 - - 1.62$  $D_2 - - 0.6$  $\rho - - 0.46$

TABLE Vc

## READING COMPREHENSION AND READING SPEED

Gamma School

Level - - 5.2

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	8.3	2.6	6.76	8.9	3.6	12.96	9.36
2	5.4	-0.3	0.09	4.5	-0.8	0.64	0.24
3	6.6	0.9	0.81	5.8	-1.5	2.25	1.34
4	3.9	-1.8	3.24	3.9	-1.4	1.96	2.52
5	4.9	-0.8	0.64	3.9	-1.4	1.96	1.12
6	5.6	-0.1	0.01	9.3	4.0	16.00	-0.40
7	8.2	2.5	6.25	5.1	-0.2	0.04	-0.50
8	6.2	0.5	0.25	5.0	-0.3	0.09	-0.15
9	6.0	0.3	0.09	4.3	-1.0	1.0	-0.30
10	6.2	0.5	0.25	4.6	-0.7	0.49	-0.35
11	3.9	-1.8	3.24	2.8	-2.5	6.25	4.50
12	6.5	0.8	0.64	5.1	-0.2	0.04	-0.16
13	5.7	0.0	- -	6.3	1.0	1.00	- -
14	7.5	1.8	3.24	5.9	0.6	0.36	1.08
15	7.7	2.0	4.00	6.7	1.4	1.96	2.80
16	5.0	-0.7	0.49	5.7	0.4	0.16	-0.28
17	6.5	0.8	0.64	5.8	0.5	0.25	0.40

Table Vc (Continued)

18	4.0	-1.7	2.89	4.6	-0.7	0.49	1.19
19	6.7	1.0	1.0	5.5	0.2	0.04	0.20
20	5.2	-0.5	0.25	5.9	0.6	0.36	-0.30
21	6.4	0.7	0.49	5.2	-0.1	0.01	-0.07
22	5.9	0.2	0.04	4.9	-0.4	0.16	-0.08
23	4.0	-1.7	2.89	4.2	-1.1	1.21	1.87
24	5.2	-0.5	0.25	4.2	-1.1	1.21	0.55
25	5.8	0.1	0.01	4.2	-1.1	1.21	-0.11
26	7.2	1.5	2.25	7.8	2.5	6.25	3.75
27	5.2	-0.5	0.25	4.5	-0.8	0.64	0.40
28	3.9	-1.8	3.24	3.4	-1.9	3.61	3.42
29	4.7	-1.0	1.00	4.9	-0.4	0.16	0.40
30	7.2	1.5	2.25	5.5	0.2	0.04	0.30
31	7.5	1.8	3.24	8.9	3.6	12.96	6.48
32	6.5	0.8	0.64	7.3	2.0	4.00	1.60
33	3.5	-2.2	4.84	3.4	-1.9	3.61	4.18
34	3.5	-2.2	$\frac{4.84}{61.01}$	3.0	-2.3	$\frac{5.29}{88.66}$	$\frac{5.06}{50.07}$

$$D_1 - - 1.35$$

$$D_2 - - 1.62$$

$$\rho - - 0.68$$



The three tables which follow deal with a group of pupils in the same school as the group just discussed in connection with Tables Va, b, and c. This group is one school level higher than the group previously discussed. The group of pupils whose scores make up Tables VIa, b, and c is one of the largest groups used in this study. The forty members of this group range in achievement in Reading Comprehension from a low of three and six-tenths to a high of nine. The range in Spelling is not as great, running from four and nine-tenths to seven and eight-tenths. The correlation of Reading Comprehension and Spelling is sixty-three-hundredths for this group.

Table VIb indicates the relationship of Reading Speed to Spelling. The correlation coefficient in this case is fifty-nine-hundredths.

Table VIc shows the relationship of Reading Comprehension to Reading Speed; the coefficient is seventy-three hundredths. The correlation between Reading Comprehension and Reading Speed is higher than the other two figures for this group. This is as it should be for the two reading tests seem more closely related than the spelling test to either of them.

There are few negative deviation products in any of these tables. This means few pupils are high in one test and low in the other. These tables also show the deviations in Spelling are not as great as are the deviations in either of the reading tests.

TABLE VIa

## READING COMPREHENSION AND SPELLING

Gamma School

Level - - 6.2

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	5.5	-1.0	1.00	5.5	-0.6	0.36	0.60
2	6.2	-0.3	0.09	6.0	-0.1	0.01	0.03
3	8.5	2.0	4.0	6.6	0.5	0.25	0.50
4	6.5	0.0	- -	6.4	0.3	0.09	- -
5	6.0	-0.5	0.25	6.0	-0.1	0.01	0.05
6	5.8	-0.7	0.49	6.4	0.3	0.09	-0.21
7	7.2	0.8	0.64	6.6	0.5	0.25	0.40
8	5.7	-0.8	0.64	5.8	-0.3	0.09	0.24
9	6.5	0.0	- -	6.1	0.0	- -	- -
10	4.7	-1.8	3.24	5.0	-1.1	1.21	1.98
11	8.0	1.5	2.25	6.9	0.8	0.64	1.20
12	5.2	-1.3	1.69	5.1	-1.0	1.00	1.30
13	8.7	2.2	4.84	6.9	0.8	0.64	1.76
14	8.8	2.3	5.29	7.2	1.1	1.21	2.53
15	6.5	0.0	- -	6.3	0.2	0.04	- -
16	5.8	-0.7	0.49	6.1	0.0	- -	- -
17	6.5	0.0	- -	6.2	0.1	0.01	- -

TABLE VIa (Continued)

18	8.5	2.0	4.00	6.8	0.7	0.49	1.40
19	8.4	1.9	3.61	7.8	1.7	2.89	3.23
20	9.0	2.5	6.25	7.6	1.5	2.25	3.75
21	6.4	-0.1	0.01	6.5	0.4	0.16	-0.04
22	5.8	-0.7	0.49	5.4	-0.7	0.49	0.49
23	6.4	-0.1	0.01	5.2	-0.9	0.81	0.09
24	5.8	-0.7	0.49	7.3	1.2	1.44	-0.84
25	6.5	0.0	- -	6.3	0.2	0.04	- -
26	6.2	-0.3	0.09	4.9	-1.2	1.44	0.36
27	5.8	-0.7	0.49	6.4	0.3	0.09	-0.21
28	7.8	1.3	1.69	6.7	0.6	0.36	0.78
29	7.7	1.2	1.44	6.3	0.2	0.04	0.24
30	7.8	1.3	1.69	6.4	0.3	0.09	0.39
31	3.6	-2.9	8.41	5.8	-0.3	0.09	0.87
32	8.4	1.9	3.61	6.5	0.4	0.16	0.76
33	6.8	0.3	0.09	6.2	0.1	0.01	0.03
34	7.2	0.7	0.49	6.0	-0.1	0.01	-0.07
35	5.6	-0.9	0.81	6.2	0.1	0.01	-0.09
36	7.0	0.5	0.25	4.6	0.5	0.25	0.25
37	6.8	0.3	0.09	6.8	0.7	0.49	0.21
38	5.7	-0.8	0.64	6.1	0.0	- -	- -
39	7.5	1.0	1.0	5.6	-0.5	0.25	0.50
40	6.0	-0.5	<u>0.25</u> 60.81	6.0	-0.1	<u>0.01</u> 17.77	<u>0.05</u> 22.53

$D_1 - - 1.23$        $D_2 - - 0.66$   
 $\rho - - 0.63$

TABLE VIb

## READING SPEED AND SPELLING

Level - - 6.2

Gamma School

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Products of Deviations
1	6.0	-1.3	1.69	5.5	-0.6	0.36	0.78
2	5.4	-1.9	3.61	6.0	-0.1	0.01	0.19
3	6.5	-0.8	0.64	6.4	0.3	0.09	-0.24
4	9.1	1.8	3.24	6.6	0.5	0.25	0.90
5	9.5	2.2	4.84	6.0	-0.1	0.01	-0.22
6	7.3	0.0	- -	6.4	0.3	0.09	- -
7	7.0	-0.3	0.09	6.6	0.5	0.25	-0.15
8	5.0	-2.3	5.29	5.8	-0.3	0.09	0.69
9	5.6	-1.7	2.89	6.1	0.0	- -	- -
10	9.4	2.1	4.41	5.0	-1.1	1.21	-2.31
11	9.6	2.3	5.29	6.9	0.8	0.64	1.84
12	4.0	-3.3	10.89	5.1	-1.0	1.0	3.30
13	9.3	2.0	4.00	6.9	0.8	0.64	1.84
14	9.0	1.7	2.89	7.2	1.1	1.21	1.87
15	7.3	0.0	- -	6.3	0.2	0.04	- -
16	5.6	-1.7	2.89	6.1	0.0	- -	- -
17	8.3	1.0	1.00	6.2	0.1	0.01	0.10
18	9.5	2.2	4.84	6.8	0.7	0.49	1.54



TABLE VIb (Continued)

19	9.0	1.7	2.89	7.8	1.7	2.89	2.89
20	8.7	1.4	1.96	7.6	1.5	2.25	2.10
21	6.2	-1.1	1.21	6.5	0.4	0.16	0.44
22	6.8	-0.5	0.25	5.4	-0.7	0.49	0.35
23	5.0	-2.3	5.29	5.2	-0.9	0.81	2.07
24	9.0	1.7	2.89	7.3	1.2	1.44	2.04
25	7.0	-0.3	0.09	6.3	0.2	0.04	-0.06
26	5.8	-1.5	2.25	4.9	-1.2	1.44	1.80
27	9.2	1.9	3.61	6.4	0.3	0.09	0.57
28	9.0	1.7	2.89	6.7	0.6	0.36	1.02
29	7.0	-0.3	0.09	6.3	0.2	0.04	-0.06
30	9.1	1.8	3.24	6.4	0.3	0.09	0.54
31	5.0	-2.3	5.29	5.8	-0.3	0.09	0.69
32	9.6	2.3	5.29	6.5	0.4	0.16	0.92
33	6.0	-1.3	1.69	6.2	0.1	0.01	0.13
34	4.5	-2.8	7.84	6.0	-0.1	0.01	0.28
35	6.8	-0.5	0.25	6.2	0.1	0.01	-0.05
36	8.6	1.3	1.69	6.6	0.5	0.25	0.65
37	6.0	-1.3	1.69	6.8	0.7	0.49	0.91
38	6.0	-1.3	1.69	6.1	0.0	- -	- -
39	9.3	2.0	4.00	5.6	-0.5	0.25	-1.00
40	5.0	-2.3	$\frac{5.29}{119.88}$	6.0	-0.1	$\frac{0.01}{17.77}$	$\frac{0.23}{26.35}$

 $D_1 - - 1.72$  $D_2 - - 0.66$  $\rho - - 0.59$

TABLE VIc

## READING COMPREHENSION AND SPEED

Gamma School

Level - - 6.2

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviation
1	5.5	-1.0	1.00	6.0	-1.3	1.69	1.30
2	6.2	-0.3	0.09	5.4	-1.9	3.61	0.57
3	8.5	2.0	4.0	9.1	1.8	3.24	3.60
4	6.5	0.0	- -	6.5	-0.8	0.64	- -
5	6.0	-0.5	0.25	9.5	2.2	4.84	1.10
6	5.8	0.7	0.49	7.3	0.0	- -	- -
7	7.2	0.8	0.64	7.0	-0.3	0.09	0.24
8	5.7	-0.8	0.64	5.0	-2.3	5.29	3.45
9	6.5	0.0	- -	5.6	-1.7	2.89	3.91
10	4.7	-1.8	3.24	9.4	2.1	4.41	3.78
11	8.0	1.5	2.25	9.6	2.3	5.29	3.45
12	5.2	-1.3	1.69	4.0	-3.3	10.89	4.29
13	8.7	2.2	4.84	9.3	2.0	4.00	4.40
14	8.8	2.3	5.29	9.0	1.7	2.89	3.91
15	6.5	0.0	- -	7.3	0.0	- -	- -
16	5.8	-0.7	0.49	5.6	-1.7	2.89	1.19
17	6.5	0.0	- -	8.3	1.0	1.0	- -
18	8.5	2.0	4.0	9.5	2.2	4.84	4.40

TABLE VIc (Continued)

19	8.4	1.9	3.61	9.0	1.7	2.89	3.23
20	9.0	2.5	6.25	8.7	1.4	1.96	3.50
21	6.4	-0.1	0.01	6.2	-1.1	1.21	0.11
22	5.8	-0.7	0.49	6.8	-0.5	0.25	0.35
23	6.4	-0.1	0.01	5.0	-2.3	5.29	0.23
24	5.8	-0.7	0.49	9.0	1.7	2.89	-1.19
25	6.5	0.0	- -	7.0	-0.3	0.09	- -
26	6.2	-0.3	0.09	5.8	-1.5	2.25	0.45
27	5.8	-0.7	0.49	9.2	1.9	3.61	-1.33
28	7.8	1.3	1.69	9.0	1.7	2.89	2.21
29	7.7	1.2	1.44	7.0	-0.3	0.09	-0.36
30	7.8	1.3	1.69	9.1	1.8	3.24	2.34
31	3.6	-2.9	8.41	5.0	-2.3	5.29	6.67
32	8.4	1.9	3.61	0.6	2.3	5.29	4.37
33	6.8	0.3	0.09	6.0	-1.2	1.69	-0.39
34	7.2	0.7	0.49	4.5	2.8	7.84	1.96
35	5.6	-0.9	0.81	6.8	-0.5	0.25	0.45
36	7.0	0.5	0.25	8.6	1.3	1.69	0.65
37	6.8	0.3	0.09	6.0	-1.3	1.69	0.39
38	5.7	-0.8	0.64	6.0	-1.3	1.69	1.04
39	7.5	1.0	1.00	9.3	2.0	4.0	2.00
40	6.0	-0.5	$\frac{0.25}{60.81}$	5.0	-2.3	$\frac{5.29}{119.88}$	$\frac{1.15}{61.90}$

 $D_1 - - 1.23$  $D_2 - - 1.72$  $\rho - - 0.73$

Tables VIIa, b, and c show relationships for a group of forty-two pupils two-tenths of the way through the seventh grade. The Delta school is the school attended by pupils after they have completed the work of the first six grades in Gamma School. This group is not as homogeneous as the group from Gamma School at the level of six and two-tenths. Several large negative products of deviation show up in these tables, this means a development in achievement that is rather out of balance or uneven. The range is wide spreading, extending from four and six-tenths grade level in Reading Comprehension to nine and seven-tenths grade level. The range in Spelling extends from three and six-tenths to nine. For this group the range in both tests is nearly the same. The range for Reading Speed is even greater than that for the other two subjects spreading from three and eight-tenths to nine and four-tenths. This is a spread of five and six-tenths grades; a few pupils in this seventh grade class are doing the work of pupils in the third grade while others are doing the work of the average ninth grade pupil. Difficulties arising from efforts to adjust the curricula and program for this group are certainly manifold. It would appear that some sort of regrouping might be in order.

The correlation of Reading Comprehension to Spelling is forty-eight-hundredths for this group of forty-two seventh grade children. This relationship seems a little lower than should be but an examination of the table shows a number of students low in Spelling while high in Reading Comprehension. This is probably partially due to the number of children of foreign extraction who have difficulties



with the Spelling but find it easier to read. The arithmetic mean of this class is two-tenths above average in Reading Comprehension, being seven and four-tenths; while the mean in Spelling is one full level below average being only six and two-tenths. Suggestions are that special work should be done without delay.

The correlation between Spelling and Reading Speed that is shown on Table VIIb is hardly high enough to be significant. A correlation coefficient of three-tenths is the usual correlation between any two persons.

The correlation between Reading Comprehension and Reading Speed is also low, being thirty-four-hundredths. The mean of the Reading Speed is low, nearly one full grade level for this group, it is only six and two-tenths while the place of the group in school is seven and two-tenths. Again it is evident that work of a special nature should be provided and also a remedial build-up program inaugurated.

TABLE VIIa

## READING COMPREHENSION AND SPELLING

Delta School

Level - - 7.2

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	8.8	1.4	1.96	6.8	0.6	0.36	0.84
2	8.4	1.0	1.00	8.5	2.3	5.29	2.30
3	8.0	0.6	0.36	7.5	1.3	1.69	0.78
4	5.8	-1.6	2.56	7.2	1.0	1.0	-1.60
5	6.9	-0.5	0.25	6.6	0.4	0.16	0.20
6	8.8	1.4	1.96	6.3	0.1	0.01	0.14
7	9.6	2.2	4.84	7.0	0.8	0.64	1.76
8	6.3	-1.1	1.21	5.8	-0.4	0.16	0.44
9	6.4	-1.0	1.0	5.9	-0.3	0.09	0.30
10	5.8	-1.6	2.56	6.3	0.1	0.01	-0.16
11	6.5	-0.9	0.81	6.2	0.0	- -	- -
12	8.5	1.1	1.21	7.2	1.0	1.00	1.10
13	9.3	1.9	3.61	8.2	2.0	4.00	3.80
14	9.6	2.2	4.84	7.9	1.7	2.89	1.87
15	7.7	0.3	0.09	7.2	1.0	1.00	0.30
16	7.7	0.3	0.09	7.2	1.0	1.00	0.30
17	7.0	-0.4	0.16	9.0	2.8	7.84	1.12
18	8.7	1.3	1.69	6.9	0.7	0.49	0.91

TABLE VIIa

19	7.5	0.1	0.01	7.0	0.8	0.64	0.08
20	8.6	1.2	1.44	6.5	0.3	0.09	0.36
21	7.5	0.1	0.01	6.9	0.7	0.49	0.91
22	7.2	-0.2	0.04	8.1	1.9	3.61	0.38
23	8.8	1.4	1.96	7.0	0.8	0.64	1.12
24	8.4	1.0	1.0	4.5	-1.7	2.89	-1.70
25	8.4	1.0	1.0	4.8	-1.4	1.96	-1.40
26	7.8	0.4	0.16	5.2	-1.0	1.0	-0.40
27	8.3	0.9	0.81	4.9	-1.3	1.69	-1.17
28	8.2	0.8	0.64	5.0	-1.2	1.44	-0.96
29	9.7	2.3	5.29	5.2	-1.0	1.0	-2.30
30	4.6	-2.8	7.84	3.6	-2.6	6.76	7.28
31	7.7	0.3	0.09	7.4	1.2	1.44	0.36
32	6.8	-0.6	0.36	7.1	0.9	0.81	-0.54
33	6.2	-1.2	1.44	6.1	-0.1	0.01	0.12
34	8.8	1.4	1.96	7.3	1.1	1.21	1.54
35	7.7	0.3	0.09	6.8	0.6	0.36	0.18
36	7.4	0.0	- -	5.7	-0.5	0.25	- -
37	4.4	-3.0	9.0	2.6	-3.6	12.96	10.80
38	7.0	-0.4	0.16	4.0	-2.2	4.84	0.88
39	6.8	-0.6	0.36	2.5	-2.7	7.29	1.62
40	5.4	-2.0	4.00	5.2	-1.0	1.0	2.00
41	5.3	-2.1	4.41	5.0	-1.2	1.44	2.52
42	7/4	0/0	- -	4.5	-1.7	2.89	- -
			<u>72.36</u>				<u>84.34</u>
							<u>35.14</u>

 $D_1 - - 1.31$  $D_2 - - 1.41$  $\rho - - 0.48$

TABLE VIIb

## READING SPEED AND SPELLING

Delta School

Level - - 7.2

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	7.8	1.6	2.56	6.8	6.6	0.36	0.96
2	7.5	1.3	1.69	8.5	2.3	5.29	2.99
3	8.2	2.0	4.0	7.2	1.0	1.0	2.0
4	6.2	-0.2	0.04	7.5	1.3	1.69	-0.26
5	6.0	-0.2	0.04	6.6	0.4	0.16	-0.08
6	7.5	1.3	1.69	6.3	0.1	0.01	0.13
7	8.0	1.8	3.24	7.0	0.8	0.64	1.44
8	4.6	-1.6	2.56	5.8	-0.4	0.16	0.64
9	5.5	-0.7	0.49	5.9	-0.3	0.09	0.21
10	9.5	3.3	10.89	6.3	0.1	0.01	0.33
11	6.0	-0.2	0.04	6.2	0.0	- -	- -
12	7.6	1.4	1.96	7.2	1.0	1.00	1.40
13	9.3	3.1	9.61	8.2	2.0	4.0	6.20
14	5.9	-0.3	0.09	7.9	1.7	2.89	0.51
15	8.9	2.7	7.29	7.2	1.0	1.0	2.70
16	9.3	2.1	4.41	7.2	1.0	1.0	2.10
17	6.2	0.0	- -	9.0	2.8	7.84	- -
18	6.0	-0.2	0.4	6.9	0.7	0.49	-0.14
19	5.5	-0.7	0.49	7.0	0.8	0.64	-0.56



TABLE VIIb (Continued)

20	6.9	0.7	0.49	6.5	0.3	0.09	0.21
21	8.0	1.8	3.24	6.9	0.7	0.49	1.26
22	9.4	3.2	10.24	8.1	1.9	3.61	6.08
23	9.3	3.1	9.61	7.0	0.8	0.64	2.48
24	5.7	-0.5	0.25	4.5	-1.7	2.89	0.85
25	6.1	-0.1	0.01	4.8	-1.4	1.96	0.14
26	5.9	-0.3	0.09	5.2	-1.0	1.00	0.30
27	8.0	1.8	3.24	4.9	-1.3	1.69	-2.34
28	6.0	-0.2	0.04	3.6	-2.6	6.76	0.52
29	9.3	3.1	9.61	5.2	-1.0	1.00	-3.10
30	6.0	-0.2	0.04	5.0	-1.2	1.44	0.24
31	4.9	-1.3	1.69	7.4	1.2	1.44	1.56
32	4.9	-1.3	1.69	7.1	0.9	0.81	-1.17
33	3.8	-2.4	5.76	6.1	-0.1	0.01	0.24
34	4.9	-1.3	1.69	7.3	1.1	1.21	1.43
35	4.2	-2.0	4.0	6.8	0.6	0.36	-1.20
36	4.0	-2.2	4.84	5.7	-0.5	0.25	1.10
37	3.5	-2.7	7.29	2.6	-3.6	12.96	9.72
38	9.4	3.2	10.24	4.0	-2.2	4.84	-7.04
39	5.0	1.2	1.44	3.5	-2.7	7.29	-3.24
40	6.2	0.0	- -	5.2	-1.0	1.0	- -
41	8.0	1.8	3.24	5.0	-1.2	1.44	-2.16
42	9.4	3.2	<u>10.24</u> 140.12	4.5	-1.7	<u>2.89</u> 84.34	<u>5.44</u> 31.89

 $D_1 - - 1.82$  $D_2 - - 1.41$  $\rho - - 0.30$

TABLE VIIc

## READING COMPREHENSION AND READING SPEED

Delta School

Level - - 7.2

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviation
1	8.8	1.4	1.96	7.8	1.6	2.56	2.24
2	8.4	1.0	1.0	7.5	1.3	1.69	1.30
3	5.8	-1.6	2.56	8.2	2.0	4.0	-3.20
4	8.0	0.6	0.36	6.0	-0.2	0.04	- 0.12
5	6.9	-0.5	0.25	6.0	-0.2	0.04	0.10
6	8.8	1.4	1.96	7.5	1.3	1.69	1.82
7	9.6	2.2	4.84	8.0	1.8	3.24	3.96
8	6.3	-1.1	1.21	4.6	-1.6	2.56	1.76
9	6.4	-1.0	1.0	5.5	-0.7	0.49	0.70
10	5.8	-1.6	2.56	9.5	3.3	10.89	-5.28
11	6.5	-0.9	0.81	6.0	-0.2	0.04	0.18
12	8.5	1.1	1.21	7.6	1.4	1.96	1.54
13	9.3	1.9	3.61	9.3	3.1	9.61	5.89
14	9.6	2.2	4.84	5.9	-0.3	0.09	0.66
15	7.7	0.3	0.09	8.9	2.7	7.29	0.81
16	7.7	0.3	0.09	8.3	2.1	4.41	0.63
17	7.0	-0.4	0.16	6.2	0.0	- -	- -
18	8.7	1.3	1.69	6.0	-0.2	0.04	0.26

TABLE VIIc (Continued)

19	7.5	0.1	0.01	5.5	-0.7	0.49	-0.07
20	8.6	1.2	1.44	6.9	0.7	0.49	0.84
21	7.5	0.1	0.01	8.0	1.8	3.24	0.18
22	7.2	-0.2	0.04	9.4	3.2	10.24	-0.64
23	8.8	1.4	1.96	9.3	3.1	9.61	4.34
24	8.4	1.0	1.0	5.7	-0.5	0.25	-0.50
25	8.4	1.0	1.0	6.4	-0.1	0.01	0.10
26	7.8	0.4	0.16	5.9	-0.3	0.09	-0.12
27	8.3	0.9	0.81	8.0	1.8	3.24	1.62
28	8.2	0.8	0.64	6.0	-0.2	0.04	-0.16
29	9.7	2.3	5.29	9.3	3.1	9.61	7.13
30	4.6	-2.8	7.84	6.0	-0.2	0.04	0.56
31	7.7	0.3	0.09	4.9	-1.3	1.69	-0.39
32	6.8	-0.6	0.36	4.9	-1.3	1.69	0.78
33	6.2	-1.2	1.44	3.8	-2.4	5.76	2.88
34	8.8	1.4	1.96	4.9	-1.3	1.69	1.82
35	7.7	0.3	0.09	4.2	-2.0	4.00	-0.60
36	7.4	0.0	- -	4.0	-2.2	4.84	- -
37	4.4	-3.0	9.0	3.5	-2.7	7.29	8.10
38	7.0	-0.4	0.16	9.4	3.2	10.24	-1.28
39	6.8	-0.6	0.36	5.0	-1.2	1.44	0.72
40	5.4	-2.0	4.0	6.2	0.0	- -	- -
41	5.3	-2.1	4.41	8.0	1.8	3.24	-3.78
42	7.4	0.0	$\frac{0.0}{72.36}$	9.4	3.2	$\frac{10.24}{140.12}$	$\frac{- -}{34.78}$

 $D_1 - - 1.31$  $D_2 - - 1.82$  $\rho - - 0.34$

Tables VIIa, b, and c show relationships for a group of twenty-six pupils from Delta School at the level of eight and two-tenths. The mean achievements for this group are: Reading Comprehension eight and two-tenths, Spelling seven and six-tenths, and Reading Speed seven and eight-tenths. These means mean that the group is average in Reading Comprehension but low in Spelling and Reading Speed. This is a situation similar to that found in studying Tables VIIa, b, and c.

The correlation between Reading Comprehension and Spelling is seventy-six-hundredths for this group. Table VIIa pictures narrowed ranges for both groups of scores and higher correlation results.

The correlation coefficient in Table VIIb for Reading Speed tests and Spelling tests is seventy-two-hundredths. The writer considers this an average group and the correlation are as might be expected.

Reading Comprehension and Reading Speed for this group have a relationship which can be represented by the figure fifty-two-hundredths. This low figure can be accounted for by the low products of deviation which in turn depend on the agreement of deviation in the two tests. A low correlation is found for these two tests while other groups in this study show a much higher correlation between these tests



TABLE VIIIa

## READING COMPREHENSION AND SPELLING

Delta School

Level - - 8.2

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Square	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Square	Product of Deviations
1	9.2	1.0	1.0	9.0	1.4	1.96	1.96
2	8.2	0.0	- -	6.5	1.1	1.21	- -
3	9.5	1.3	1.69	8.2	0.6	0.36	0.78
4	9.7	1.5	2.25	9.4	1.8	3.24	2.70
5	8.7	0.5	0.25	7.7	0.1	0.01	0.05
6	6.7	-1.5	2.25	6.5	-1.4	1.21	1.65
7	9.4	1.2	1.44	7.0	-0.6	0.36	-0.72
8	8.0	-0.2	0.04	7.9	0.3	0.09	10.06
9	9.6	1.4	1.96	9.0	1.4	1.96	1.96
10	8.4	0.2	0.04	7.2	-0.4	0.16	-0.08
11	7.9	-0.3	0.09	7.0	-0.6	0.36	0.18
12	8.0	-0.2	0.04	7.6	0.0	- -	- -
13	9.0	0.8	0.64	9.0	1.4	1.96	1.12
14	9.0	0.8	0.64	7.2	-0.4	0.16	0.32
15	7.8	-0.4	0.16	7.8	0.2	0.04	-0.08
16	8.8	0.6	0.36	8.9	1.3	1.69	0.78
17	6.8	-1.4	1.96	6.4	-1.2	1.44	1.68
18	8.3	0.1	0.01	7.8	0.2	0.04	0.02

TABLE VIII<sub>a</sub>(Continued)

19	9.4	1.2	1.44	9.4	1.8	3.24	2.16
20	7.5	-0.7	0.49	8.2	0.6	0.36	-0.42
21	6.2	-2.0	4.0	6.9	-0.7	0.49	1.40
22	6.0	-2.2	4.84	5.6	-2.0	4.0	4.40
23	5.8	-2.4	5.76	6.8	-0.8	0.64	1.92
24	7.5	-0.7	0.49	6.5	-1.1	1.21	0.77
25	7.5	-0.7	0.49	6.8	-0.8	0.64	0.56
26	9.3	1.1	$\frac{1.21}{33.54}$	9.4	1.8	$\frac{3.24}{30.07}$	$\frac{1.98}{25.03}$

 $D_1 - - 1.17$  $D_2 - - 1.08$  $\rho - - 0.76$

TABLE VIIIb

## READING SPEED AND SPELLING

Delta School

Level - - 8.2

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	9.6	1.8	3.24	9.0	1.4	1.96	2.52
2	7.8	0.0	- -	6.5	-1.1	1.21	- -
3	9.0	1.2	1.44	8.2	0.6	0.36	0.72
4	9.4	1.6	2.56	9.4	1.8	3.24	2.88
5	9.2	1.4	1.96	7.7	0.1	0.01	0.14
6	5.9	-1.9	3.61	6.5	-1.1	1.21	2.09
7	6.8	-1.0	1.0	7.0	-0.6	0.36	0.60
8	6.2	-1.6	2.56	7.9	0.3	0.09	-0.48
9	9.3	1.5	2.25	9.0	1.4	1.96	2.10
10	8.0	0.2	0.04	7.2	-0.4	0.16	-0.08
11	7.2	-0.6	0.36	7.0	-0.6	0.36	0.36
12	7.3	-0.5	0.25	7.6	0.0	- -	- -
13	9.4	1.6	2.56	9.0	1.4	1.96	2.24
14	9.0	1.2	1.44	7.2	-0.4	0.16	-0.48
15	5.3	-2.5	6.25	7.8	0.2	0.04	-0.50
16	8.0	0.2	0.04	8.9	1.3	1.69	0.26
17	6.3	-1.5	2.25	6.4	-1.2	1.44	1.80
18	9.4	1.6	2.56	7.8	0.2	0.04	0.72

TABLE VIIIb (Continued)

19	9.4	1.6	2.56	9.4	1.8	3.24	2.88
20	9.3	1.5	2.25	8.2	0.6	0.36	0.90
21	7.0	-0.8	0.64	6.9	-0.7	0.49	0.56
22	9.3	1.5	2.25	5.6	-2.0	4.00	0.30
23	6.8	-1.0	1.00	6.8	-0.8	0.64	0.80
24	5.9	-1.9	3.61	6.5	-1.1	1.21	1.09
25	4.5	-3.3	10.89	6.8	-0.8	0.64	2.64
26	8.0	0.2	<u>0.04</u>	9.4	1.8	<u>3.24</u>	<u>0.36</u>
			57.61			30.07	24.42

 $D_1 - - 1.49$  $D_2 - - 1.07$  $\rho - - 0.72$



TABLE VIIIc

## READING COMPREHENSION AND READING SPEED

Delta School

Level - - 8.2

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	9.2	1.0	1.0	9.6	1.8	3.24	1.80
2	8.2	0.0	- -	7.8	0.0	- -	- -
3	9.5	1.3	1.69	9.0	1.2	1.44	1.56
4	9.7	1.5	2.25	9.4	1.6	2.56	2.40
5	8.7	0.5	0.25	9.2	1.4	1.96	0.70
6	6.7	-1.5	2.25	5.9	-1.9	3.61	2.80
7	9.4	1.2	1.44	6.8	-1.0	1.0	-1.20
8	8.0	-0.2	0.04	6.2	-1.6	2.56	0.32
9	9.6	1.4	1.96	9.3	1.5	2.25	2.10
10	8.4	0.2	0.04	8.0	0.2	0.04	0.04
11	7.9	-0.3	0.09	7.2	-0.6	0.36	0.18
12	8.0	-0.2	0.04	7.3	-0.5	0.25	0.10
13	9.0	0.8	0.64	9.0	1.2	1.44	0.96
14	9.0	0.8	0.64	9.4	1.6	2.56	1.28
15	7.8	-0.4	0.16	5.3	-2.5	6.25	1.00
16	8.8	0.6	0.36	8.0	0.2	0.04	0.12
17	6.8	-1.4	1.96	6.3	-1.5	2.25	2.10

TABLE VIIIc (Continued)

18	8.3	0.1	0.01	9.4	1.6	2.56	0.16
19	9.4	1.2	1.44	9.4	1.6	2.56	1.96
20	7.5	-0.7	0.49	9.3	1.5	2.25	-1.05
21	6.2	-2.0	4.0	7.0	-0.8	0.64	1.60
22	6.0	-2.2	4.84	9.3	1.5	2.25	-1.65
23	5.8	-2.4	5.76	6.8	-1.0	1.00	2.40
24	7.5	-0.7	0.49	5.9	-1.9	3.61	1.33
25	7.5	-0.7	0.49	4.5	-3.3	10.89	2.31
26	9.3	1.1	$\frac{1.21}{33.54}$	8.0	0.2	$\frac{0.04}{57.61}$	$\frac{0.22}{23.54}$

$$D_1 - - 1.17$$

$$D_2 - - 1.49$$

$$\rho - - 0.52$$

Tables IXa, b, and c show relationships at four different levels in Epsilon School. It is possible to do this with this set of tables because of the small classes or groups at each level. There are four pupils in each of the four levels in the tables.

The relationship of Reading Comprehension and Spelling at the five and five-tenths level is sixty-two-hundredths for the four pupils in the group. The relationship at the six and five-tenths level is forty-three-hundredths; at the next level, seven and five-tenths, it is eighty-five-hundredths. These relationships are not unusual however the relationship at the eight and five-tenths level is quite unusual in that it is a negative relationship. The Coefficient of Correlation is negative sixteen-hundredths, which slight negative correlation means that for this group the good spellers are not the good readers. This is the only group in the complete study that shows a negative relationship. The reason for this can be ascribed chiefly to individual differences and to the smallness of the group. Four pupils were grouped together in the same school consequently a relatively, high negative correlation of one pupil's scores caused a negative correlation.

TABLE IXa

## READING COMPREHENSION AND SPELLING

Epsilon School

Level - - 5.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	5.2	1.0	1.0	4.1	1.3	1.69	1.3
2	3.0	-1.2	1.44	2.0	-0.8	0.64	0.96
3	3.2	-1.0	1.0	2.0	-0.8	0.64	0.80
4	5.2	1.0	<u>1.0</u> 4.44	3.2	0.4	<u>0.16</u> 3.13	<u>0.40</u> 2.29

 $D_1 - - 1.05$  $D_2 - - 0.88$ 

rho - - 0.62

Level - - 6.5

1	4.6	-0.2	0.04	3.9	0.4	0.16	-0.08
2	6.4	1.6	2.56	3.6	0.1	0.01	0.16
3	3.8	-1.0	1.00	2.9	-0.6	0.36	0.60
4	4.5	-0.3	<u>0.09</u> 3.69	3.7	0.2	<u>0.04</u> 0.57	<u>-0.06</u> 0.62

 $D_1 - - 0.97$  $D_2 - - 0.37$ 

rho - - 0.43

Level - - 7.5

1	6.0	0.5	0.25	3.1	-0.7	0.49	-0.35
2	7.8	2.3	5.29	5.2	1.4	1.96	3.22
3	3.9	-1.6	2.56	2.0	-1.8	3.24	2.88
4	4.5	-1.0	<u>1.00</u> 9.10	2.0	-1.8	<u>3.24</u> 8.93	<u>1.80</u> 7.55

 $D_1 - - 1.51$  $D_2 - - 1.49$ 

rho - - 0.85



TABLE IXa (Continued)

1	7.7	-0.1	0.01	5.1	-0.5	<u>Level - - 8.5</u> 0.25      0.05
2	8.7	0.9	0.81	4.8	-0.8	0.64      -0.72
3	7.0	-0.8	0.64	5.6	0.0	- -      - -
4	8.0	0.2	<u>0.04</u> 1.50	7.1	1.5	<u>2.25</u> 3.14 <u>0.30</u> -0.37
$D_1 - - 0.62$			$D_2 - - 0.89$		$Rho - - (-0.16)$	

Table IXb shows the relationship of Reading Speed and Spelling for the same four small groups. The coefficient at the five and five-tenths level is eighty-one-hundredths. The relationship is considerably lower for the next group at the six and five-tenths level with a coefficient of fifty-seven-hundredths. The relationship at the seven and five-tenths level is eighty-seven-hundredths. It should be noted from the table that the relationship for the group at the eight and five-tenths level is again negative. This is the same group having a negative correlation between Reading Comprehension and Spelling. The reason for the negative correlation is not one of a negative relationship as in the case of the relationship mentioned in connection with the IXa Table, but due to three of the four pupils showing a negative relationship between the two tests.

The relationships of Reading Comprehension to Reading Speed at the four levels are unusual. The correlation at the five and five-tenths level is seventy-two-hundredths, at the six and five-tenths level it is negative twenty-eight-hundredths. This negative relationship may be ascribed to chance and the smallness of the group. Three of the four cases show a negative relationship between the scores on the tests. At the seven and five-tenths level the relationship is found to be forty-three-hundredths. The group at the eight and five-tenths level shows a positive relationship between these tests, and a coefficient of fifty-seven-hundredths.

TABLE IXb

## READING SPEED AND SPELLING

Epsilon School

Level - - 5.5

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	4.6	0.7	0.49	4.1	1.3	1.69	0.91
2	2.6	-1.3	1.68	2.0	-0.8	0.64	1.04
3	3.2	-0.7	0.49	2.0	-0.8	0.64	0.56
4	5.3	1.4	$\frac{1.96}{4.63}$	3.2	0.4	$\frac{0.16}{3.13}$	$\frac{0.56}{3.07}$

 $D_1 - - 1.08$  $D_2 - - 0.88$  $\rho - - 0.81$ Level - - 6.5

1	4.9	0.5	0.25	3.9	0.4	0.16	0.20
2	4.0	-0.4	0.16	3.6	0.1	0.01	-0.04
3	4.0	-0.4	0.16	2.9	-0.6	0.36	0.24
4	5.0	0.6	$\frac{0.36}{0.93}$	3.5	0.0	$\frac{-}{0.57}$	$\frac{-}{0.40}$

 $D_1 - - .48$  $D_2 - - 0.37$  $\rho - - 0.57$ Level - - 7.5

1	4.2	-0.2	0.04	3.1	-0.7	0.49	0.14
2	9.4	5.0	25.00	5.2	1.4	1.96	7.00
3	1.2	-3.2	10.24	2.0	-1.8	3.24	5.76
4	2.6	-1.8	$\frac{3.24}{38.52}$	2.0	-1.8	$\frac{3.24}{8.93}$	$\frac{3.24}{16.14}$

 $D_1 - - 3.1$  $D_2 - - 1.49$  $\rho - - 0.87$

TABLE IXb (Continued)

1	9.4	0.1	0.01	4.8	-0.8	0.64	$\frac{\text{Level} - -8.5}{-0.08}$
2	9.4	0.1	0.01	5.1	-0.5	0.25	-0.05
3	9.2	-0.1	0.01	5.6	0.0	- -	- -
4	9.2	-0.1	$\frac{0.01}{0.04}$	7.1	1.5	$\frac{2.25}{3.14}$	$\frac{-0.15}{-0.28}$

$D_1 - - 0.1$        $D_2 - - 0.89$        $\rho - - (-0.80)$



TABLE IXc

## READING COMPREHENSION AND READING SPEED

Epsilon School

Level - - 5.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	5.2	1.0	1.0	4.6	0.7	0.49	0.70
2	3.0	-1.2	1.44	2.6	-1.3	1.69	1.56
3	3.2	-1.0	1.0	3.2	-0.7	0.49	0.70
4	5.2	1.0	<u>1.0</u> 4.44	5.3	1.4	<u>1.96</u> 4.63	<u>1.40</u> 3.36

 $D_1 - - 1.05$  $D_2 - - 1.08$  $\rho - - 0.72$ 

						<u>Level - - 6.5</u>	
1	<del>4.6</del>	-0.2	0.04	4.9	0.5	0.25	-0.10
2	6.4	1.6	2.56	4.0	-0.4	0.16	-0.64
3	3.8	1.0	1.0	4.0	-0.4	0.16	0.40
4	4.5	-0.3	<u>0.09</u> 3.69	5.0	0.6	<u>0.36</u> 0.93	<u>-0.18</u> -0.52

 $D_1 - - 0.97$  $D_2 - - 0.48$  $\rho - - (-0.28)$ Level - - 7.5

1	6.0	0.05	0.25	4.2	-0.2	0.04	-0.10
2	7.8	2.3	5.29	9.4	5.0	25.00	1.15
3	3.9	-1.6	2.56	1.2	-3.2	10.24	5.12
4	8.0	0.2	<u>0.04</u> 9.10	2.6	-1.8	<u>3.24</u> 38.52	<u>1.80</u> 7.97

 $D_1 - - 1.51$  $D_2 - - 3.1$  $\rho - - 0.43$

TABLE IXc (Continued)

						Level - - 8.5	
1	7.7	-0.1	0.01	9.4	0.1	0.01	-0.01
2	8.7	0.9	0.81	9.4	0.1	0.01	0.09
3	7.0	-0.8	0.64	9.2	-0.1	0.01	0.08
4	8.0	0.2	<u>0.04</u>	9.5	-0.1	<u>0.01</u>	<u>0.02</u>
			1.50			0.04	0.14

 $D_1 - - 0.62$  $D_2 - - 0.1$  $\rho - - 0.57$

The Tables Xa, b, and c like the preceding tables are the relationships for small groups. The coefficient of correlation in all parts of these tables is positive and high enough to show significant relationship.

While the correlation is high the level of achievement is low, especially in Spelling. The rho value for Reading Comprehension and Spelling is ninety-eight-hundredths at the four and five-tenths level, seventy-three-hundredths at the seven and five-tenths level and eighty-five-hundredths at the eight and five-tenths level.

Table Xb shows the rho value to be seventy-five-hundredths at the four and five-tenths level, fifty-two hundredths at the seven and five-tenths level and eighty-four-hundredths at the eight and five-tenths level. The correlation coefficient for Reading Comprehension and Reading Speed at the four and five-tenths level is eighty-five-hundredths, at the seven and five-tenths level it is ninety-four-hundredths and for the eight and five-tenths level the value is eighty-eight-hundredths. These values indicate high positive relationship between the tests for these pupils.

The tables show Spelling scores to be approximately one whole level below the level actually attained in the school. The difference in individuals and in small groups of individuals is again evident from the mean for the Spelling scores at the seven and five-tenths level and the Spelling scores at the eight and five-tenths level. The mean for the more advanced group is one-tenth of the grade level lower than that for the group at the seven and five-tenths level.

TABLE Xa

## READING COMPREHENSION AND SPELLING

Zeta School

Level - - 4.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	4.4	0.3	0.09	3.7	0.5	0.25	0.15
2	4.8	0.7	0.49	3.7	0.5	0.25	0.35
3	2.7	-1.4	1.96	2.1	-1.1	1.21	1.54
4	4.4	0.3	<u>0.09</u> 2.63	3.3	0.1	<u>0.01</u> 1.72	<u>0.03</u> 2.07

 $D_1 - - 0.81$  $D_2 - - 0.65$  $\rho - - 0.98$ 

Level - - 7.5

1	6.4	-1.1	1.21	5.7	-0.7	0.49	0.77
2	7.8	0.3	0.09	6.0	-0.4	0.16	-0.12
3	7.4	-0.1	0.01	5.9	-0.5	0.25	0.05
4	7.8	0.3	0.09	7.3	0.9	0.81	0.27
5	8.0	0.5	<u>0.25</u> 1.65	7.3	0.9	<u>0.81</u> 2.52	<u>0.45</u> 1.42

 $D_1 - - 0.57$  $D_2 - - 0.71$  $\rho - - 0.73$ 

Level 8.5

1	8.4	0.7	0.49	7.3	1.8	3.24	1.26
2	7.2	-0.5	0.25	6.3	0.8	0.64	-0.40
3	6.5	-1.2	1.44	2.6	-2.9	8.41	3.48
4	7.8	0.1	<u>0.01</u> 2.19	5.7	0.2	<u>0.04</u> 12.33	<u>0.02</u> 4.36

 $D_1 - - 0.74$  $D_2 - - 1.72$  $\rho - - 0.85$



TABLE Xb

## READING SPEED AND SPELLING

Zeta School

Level - - 4.5

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	4.4	-0.7	0.49	3.7	0.5	0.25	-0.35
2	7.0	1.9	3.61	3.7	0.5	0.25	0.95
3	3.2	-1.9	3.61	2.1	-1.1	1.21	2.09
4	6.0	0.1	<u>0.01</u>	3.3	0.1	<u>0.01</u>	<u>0.01</u>
			7.72			1.72	2.70

 $D_1 - - 1.39$  $D_2 - - 0.65$  $\rho - - 0.75$ 

Level - - 7.5

1	6.9	-0.4	0.16	5.6	-0.7	0.49	0.28
2	7.4	0.1	0.01	6.0	-0.4	0.16	-0.04
3	7.4	0.1	0.01	5.9	-0.5	0.25	-0.05
4	7.4	0.1	0.01	7.3	0.9	0.81	0.09
5	7.4	0.1	<u>0.01</u>	7.3	0.9	<u>0.81</u>	<u>0.09</u>
			0.20			2.52	0.37

 $D_1 - - 0.2$  $D_2 - - 0.71$  $\rho - - 0.52$ 

Level - - 8.5

1	9.0	2.1	4.41	7.3	1.8	3.24	3.78
2	8.4	1.5	2.25	6.3	0.8	0.64	1.20
3	5.0	-1.9	3.61	2.6	-2.9	8.41	5.51
4	5.4	-1.5	<u>2.25</u>	5.7	0.2	<u>0.04</u>	<u>-0.30</u>
			12.52			12.33	10.19

 $D_1 - - 1.77$  $D_2 - - 1.72$  $\rho - - 0.84$



TABLE Xc

## READING COMPREHENSION AND READING SPEED

Zeta School

Level - - 4.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	4.4	0.3	0.09	4.4	-0.7	0.49	-0.21
2	4.8	0.7	0.49	7.0	1.9	3.61	1.33
3	2.7	-1.4	1.96	3.2	-1.9	3.61	2.66
4	4.4	0.3	<u>0.09</u> 2.63	6.0	0.1	<u>0.01</u> 7.72	<u>0.03</u> 3.81

 $D_1 - - 0.81$  $D_2 - - 1.39$  $\rho - - 0.85$ Level - - 7.5

1	6.4	-1.1	1.21	6.9	-0.4	0.16	0.44
2	7.8	0.3	0.09	7.4	0.1	0.01	0.03
3	7.4	-0.1	0.01	7.4	0.1	0.01	-0.01
4	7.8	0.3	0.09	7.4	0.1	0.01	0.03
5	8.0	0.5	<u>0.25</u> 1.65	7.4	0.1	<u>0.01</u> 0.20	<u>0.05</u> 0.54

 $D_1 - - 0.57$  $D_2 - - 0.2$  $\rho - - 0.94$ Level - - 8.5

1	8.4	0.7	0.49	9.0	2.1	4.41	1.47
2	7.2	-0.5	0.25	8.4	1.5	2.25	0.75
3	6.5	-1.2	1.44	5.0	-1.9	3.61	2.28
4	7.8	0.1	<u>0.01</u> 2.19	5.4	-1.5	<u>2.25</u> 12.52	<u>-0.15</u> 4.35

 $D_1 - - 0.74$  $D_2 - - 1.77$  $\rho - - 0.88$

The tables for the level of four and five-tenths in Eta School give another picture of relationships. There is significant correlation between Reading Comprehension and Spelling and also between Reading Comprehension and Reading Speed, but the relationship between Reading Speed and Spelling is not high enough to be of any significance. This is the only group from Eta School that was tested since it was the only group large enough to work into a table. This group shows that there are several pupils high in Spelling while low in Reading Speed or vice versa. Only eight individuals make up the group but in order to make this study more accurate, scientific and complete the writer felt it necessary to include the smaller groups from the area with the larger groups. The Reading Speed scores seem to be very high for this group of fourth grade pupils but this does not entirely explain the absence of correlation of the deviations between Reading Speed and Spelling.

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TABLE XIa

## READING COMPREHENSION AND SPELLING

Eta School

Level - - 4.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Square	Product of Deviations
1	3.8	-1.5	2.25	4.2	-0.5	0.25	0.75
2	5.0	-0.3	0.09	3.5	-1.2	1.44	0.36
3	4.7	-0.6	0.36	5.7	1.0	1.00	0.60
4	5.2	-0.1	0.01	5.2	0.5	0.25	-0.05
5	4.5	-0.8	0.64	4.2	-0.5	0.25	0.40
6	5.4	0.1	0.01	3.6	1.1	1.21	0.11
7	6.0	0.7	0.49	6.4	1.7	2.89	1.19
8	7.7	2.4	<u>5.76</u>	5.1	0.4	<u>0.16</u>	<u>0.96</u>
			9.61			7.45	4.32

 $D_1 - - 1.09$  $D_2 - - 0.97$  $\rho - - 0.52$

TABLE XIb

## READING SPEED AND SPELLING

Eta School

Level 4.5

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	7.5	-0.2	-0.04	4.2	-0.5	0.25	0.10
2	8.0	0.3	0.09	3.5	-1.2	1.44	-0.36
3	6.4	-1.3	1.69	5.7	1.0	1.00	-1.30
4	8.0	0.3	0.09	5.2	0.5	0.25	0.15
5	6.3	-1.1	1.21	4.2	-0.5	0.25	0.55
6	8.0	0.3	0.09	3.6	-1.1	1.21	-0.33
7	8.9	1.2	1.44	6.4	1.7	2.89	2.04
8	7.7	0.0	<u>- -</u> 4.65	5.1	0.4	<u>0.16</u> 7.45	<u>- -</u> 0.85

 $D_1 - - 0.76$  $D_2 - - 0.97$  $\rho - - 0.15$



TABLE XIc

## READING COMPREHENSION AND READING SPEED

Eta School

Level - - 4.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	3.8	-1.5	2.25	7.5	-0.2	0.04	0.30
2	5.0	-0.3	0.09	8.0	0.3	0.09	-0.09
3	4.7	-0.6	0.36	6.4	-1.3	1.69	0.78
4	5.2	-0.1	0.01	8.0	0.3	0.09	-0.03
5	4.5	-0.8	0.64	6.3	-1.1	1.21	0.88
6	5.4	0.1	0.01	8.0	0.3	0.09	0.03
7	6.0	0.7	0.49	8.9	1.2	1.44	0.84
8	7.7	2.4	<u>5.76</u>	7.7	0.0	<u>- -</u>	<u>- -</u>
			9.61			4.65	2.71

 $D_1 - - 1.09$  $D_2 - - 0.76$  $\rho - - 0.41$



The pupils listed in the tables with the descriptive connotation "Theta School" are not groups in the sense that a class in one school is a group. These pupil's scores have been grouped together for convenience of treatment; the pupils are from several small rural schools and have not necessarily had the same educational opportunities.

Tables XIIa, b, and c show the relationships for eleven pupils at the five and five-tenths grade level. The very nature of this group might explain the wide spreading range. The range in Reading Comprehension is from three and two-tenths to eight and four-tenths or through five and two-tenths grades. This range is unusually large but it is not likely that the extremes are found in the same rural school. The range in Spelling is from two and five-tenths to seven and five-tenths or through five grade levels. The range in Reading Speed is even greater spreading from three and nine-tenths to nine and five-tenths but due to the fact that the tests were not all administered together or at the same time there is possibility of variation in administrative procedure.

The mean scores for the group do not seem to be at much variance with the standardized figures. The Reading Comprehension mean is five and six-tenths for this group at the actual level of five and five-tenths. The Spelling mean for the group is five and two-tenths for the group and the Reading Speed mean is seven and one-tenth. Spelling is slightly low but the Reading Speed is too high.

The correlation between Reading Comprehension and Spelling is the lowest of the three correlation coefficients for this group. The figure forty-seven-hundredths still indicates a positive relationship but it falls short of the mean of the correlations for this study. The relationship of Reading Speed to Spelling is sixty-six-hundredths while the relationship of Reading Speed to Reading Comprehension is sixty-seven-hundredths.

TABLE XIIa

## READING COMPREHENSION AND SPELLING

Theta School

Level - - 5.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	3.2	-2.4	5.76	2.5	2.7	7.29	6.00
2	8.4	2.8	7.84	5.6	0.4	0.16	1.12
3	5.8	0.2	0.04	4.9	-0.3	0.09	-0.06
4	7.8	2.2	4.84	7.3	2.1	4.41	4.62
5	5.4	-0.2	0.04	7.5	2.3	5.29	-0.46
6	6.7	1.1	1.21	5.5	0.3	0.09	0.33
7	5.8	0.2	0.04	5.0	-0.2	0.04	-0.04
8	3.6	-2.0	4.00	3.5	-1.8	3.24	3.60
9	7.0	1.4	1.96	5.6	0.4	0.16	0.56
10	3.2	-2.4	5.76	7.1	1.9	3.61	-4.56
11	4.7	-0.9	<u>0.81</u>	2.6	-2.6	<u>6.76</u>	<u>2.34</u>
			32.30			31.14	14.45

 $D_1 - - 1.72$  $D_2 - - 1.63$  $\rho - - 0.47$

TABLE XIIf

## READING SPEED AND SPELLING

Theta School

Level - - 5.5

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	6.2	-0.9	0.81	2.5	-2.7	7.29	2.43
2	9.5	2.4	5.76	5.6	0.4	0.16	0.96
3	9.4	2.3	5.28	4.9	-0.3	0.09	-0.69
4	8.7	1.6	2.56	7.3	2.1	4.41	3.36
5	7.5	0.4	0.16	6.4	2.3	5.29	0.92
6	7.3	0.2	0.04	5.5	0.3	0.09	0.06
7	7.0	-0.1	0.01	5.0	-0.2	0.04	0.02
8	3.9	-3.2	10.24	3.5	-1.8	3.24	5.76
9	6.6	-0.5	0.25	5.6	0.4	0.16	-0.20
10	7.1	0.0	- -	3.5	1.9	3.61	- -
11	4.6	-2.5	<u>6.25</u> 31.36	2.6	-2.6	<u>6.76</u> 31.14	<u>6.50</u> 19.81

 $D_1 - - 1.68$  $D_2 - - 1.63$  $\rho - - 0.66$



TABLE XIIc

## READING COMPREHENSION AND READING SPEED

Theta School

Level - - 5.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	3.2	-2.4	5.76	6.2	-0.9	0.81	2.26
2	8.4	2.8	7.84	0.5	2.4	5.76	6.72
3	5.8	0.2	0.04	9.4	2.3	5.28	0.46
4	7.8	2.2	4.84	8.7	1.6	2.56	3.52
5	5.4	-0.2	0.04	7.5	0.4	0.16	-0.08
6	6.7	1.1	1.21	7.3	0.2	0.04	0.22
7	5.8	0.2	0.04	7.0	-0.1	0.01	-0.02
8	3.6	-2.0	4.00	3.9	-3.2	10.24	6.40
9	7.0	1.4	1.96	6.6	-0.5	0.25	-0.70
10	3.2	-2.4	5.76	7.1	0.0	- -	- -
11	4.7	-0.9	0.81	4.6	-2.5	6.25	2.25
			32.30			31.36	21.03

 $D_1 - - 1.72$  $D_2 - - 1.68$  $\rho - - 0.67$



The nine pupils at the six and five-tenths level in the Theta School resemble the preceding group studied from these schools in that the range is wide spreading and the achievement of individual pupils varied. The means are again normal in the case of Reading Comprehension and Reading Speed, being six and six and one-tenth respectively.

The relationship of Reading Comprehension to Spelling is seventy-four hundredths. The relationship of Reading Speed to Spelling is seventy-three-hundredths while the relationship of Reading Comprehension to Reading Speed is lower being only fifty-seven-hundredths.

No negative product of deviation occurs in Table XIIIa, but the "b" table shows one case in which a negative product of deviations occur. The "c" table or the relationship between Reading Comprehension and Reading Speed shows there are three pupils above the mean in one while below in the other. This occurs a number of times in this study and may indicate that there is more correlation between the Reading Comprehension and Spelling at lower levels than between Reading Comprehension and Reading Speed.

TABLE XIIIa

## READING COMPREHENSION AND SPELLING

Theta School

Level - - 6.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	7.2	1.2	1.44	5.5	1.1	1.21	1.32
2	3.6	-2.4	5.76	3.0	-1.4	1.96	3.36
3	2.3	-3.7	13.69	3.8	-0.6	0.36	2.22
4	7.4	1.4	1.96	4.6	0.2	0.04	2.80
5	6.8	0.8	0.64	6.3	1.9	3.61	1.52
6	5.7	-0.3	0.09	6.4	2.0	4.00	2.60
7	4.7	-1.3	1.69	2.4	-2.0	4.00	2.60
8	9.0	3.0	9.00	5.4	1.0	1.00	3.00
9	7.4	1.4	<u>1.96</u>	5.2	0.8	<u>0.64</u>	<u>1.12</u>
			36.03			16.82	17.34

 $D_1 - - 2$  $D_2 - - 1.36$  $\rho - - 0.74$

TABLE XIIIb

## READING SPEED AND SPELLING

Theta School

Level - - 6.5

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviation
1	7.7	1.6	2.56	5.5	1.1	1.21	1.76
2	3.6	-2.5	6.25	3.0	-1.4	1.96	3.50
3	3.4	-2.7	7.29	3.8	-0.6	0.36	1.62
4	9.0	2.9	8.41	4.6	0.2	0.04	0.58
5	8.5	2.4	5.76	6.3	1.9	3.61	4.56
6	8.3	2.2	4.84	6.4	2.0	4.00	4.40
7	4.2	-1.9	3.61	2.4	-2.0	4.00	3.80
8	4.9	-1.2	1.44	5.4	1.0	1.00	-1.20
9	5.7	-0.4	<u>0.16</u>	5.2	0.8	<u>0.64</u>	<u>-0.32</u>
			40.32			16.82	18.70

 $D_1 - - 2.1$  $D_2 - - 1.36$  $\rho - - 0.73$

TABLE XIIIc

## READING COMPREHENSION AND READING SPEED

Theta School

Level - - 6.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	7.2	1.2	1.44	7.7	1.6	2.56	1.92
2	3.6	-2.4	5.76	3.6	-2.5	6.25	6.00
3	2.3	-3.7	13.69	3.4	-2.7	7.29	9.99
4	7.4	1.4	1.96	9.0	2.9	8.41	4.06
5	6.8	0.8	0.64	8.5	2.4	5.76	1.92
6	5.7	-0.3	0.09	8.3	2.2	4.84	-0.66
7	4.7	-1.3	1.69	4.2	-1.9	3.61	2.47
8	9.0	3.0	9.00	4.9	-1.2	1.44	-3.60
9	7.4	1.4	<u>1.96</u>	5.7	-0.4	<u>0.16</u>	<u>-0.56</u>
			36.23			40.32	21.54

 $D_1 - - 2$  $D_2 - - 2.1$  $\rho - - 0.57$

The following tables are the last score tabulation tables in this study. They show the relationships for a group of seven pupils at the seven and five-tenths level from the Theta School.

The correlation coefficients in these tables appear to be almost a reverse of the coefficients in the preceding tables in that the relationship of Reading Comprehension to Spelling is low while the Relationship of Reading Comprehension to Reading Speed is exceptionally high. The question well might be "Which group is normal?" Since there is no completely normal individual there is no completely normal group.

The correlation coefficients are: Reading Comprehension and Spelling thirty-one-hundredths, Reading Speed and Spelling sixty-hundredths and for Reading Comprehension and Reading Speed it is ninety-hundredths.

The range is again extended for a small group of seven pupils but the explanation here is that the group is superficial and only devised for convenience of treatment.



TABLE XIVa

## READING COMPREHENSION AND SPELLING

Theta School

Level 7.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Spelling Score	Spelling Score Deviation	Spelling Score Deviation Squared	Product of Deviations
1	7.2	0.7	0.49	5.7	1.1	1.21	0.77
2	6.0	-0.5	0.25	6.5	1.9	3.61	-0.95
3	9.5	3.0	9.00	4.9	0.3	0.09	0.90
4	9.0	2.5	6.25	4.6	0.0	- -	- -
5	6.7	0.2	0.04	3.2	-1.4	1.96	-0.28
6	4.0	-2.5	6.25	3.5	-0.9	0.81	2.25
7	3.2	-3.3	<u>10.89</u>	3.9	-0.7	<u>0.49</u>	<u>2.31</u>
			33.17			8.37	5.09

 $D_1 - - 2.18$  $D_2 - - 1.08$  $\rho - - 0.31$

TABLE XIVb

## READING SPEED AND SPELLING

Theta School

Level - - 7.5

Individual	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Spelling Score	Spelling Score Deviations	Spelling Score Deviations Squared	Product of Deviations
1	8.3	1.6	2.56	5.7	1.1	1.21	1.76
2	7.3	0.6	0.36	6.5	1.9	3.61	1.14
3	9.5	2.8	7.84	4.9	0.3	0.09	0.84
4	0.5	2.8	7.84	4.6	0.0		
5	4.9	-1.8	3.24	3.2	-1.4	1.96	2.52
6	3.4	-3.3	10.89	3.5	-0.9	0.81	2.97
7	4.2	-2.5	<u>6.25</u>	3.9	-0.7	<u>0.49</u>	<u>1.75</u>
			38.98			8.37	10.98

 $D_1 - - 2.35$  $D_2 - - 1.08$  $\rho - - 0.60$

TABLE XIVc

## READING COMPREHENSION AND READING SPEED

Theta School

Level - - 7.5

Individual	Reading Comprehension	Reading Comprehension Deviation	Reading Comprehension Deviation Squared	Reading Speed	Reading Speed Deviation	Reading Speed Deviation Squared	Product of Deviations
1	7.2	0.7	0.49	8.3	1.6	2.56	1.12
2	6.0	-0.5	0.25	7.3	0.6	0.36	-0.30
3	9.5	3.0	9.00	9.5	2.8	7.84	8.40
4	9.0	2.5	6.25	0.5	2.8	7.94	7.00
5	6.7	0.2	0.04	4.9	-1.8	3.24	-0.36
6	4.0	-2.5	6.25	3.4	-3.3	10.89	8.25
7	3.2	-3.3	<u>10.89</u>	4.2	-2.5	<u>6.25</u>	<u>8.25</u>
			33.17			38.98	32.36

 $D_1 - - 2.18$  $D_2 - - 2.35$ 

rho - - 0.90

## CHAPTER III

## ANALYSIS OF FINDINGS AND SUMMARY

## Analysis of Findings

The study includes two hundred ninety-two pupils and the scores from three tests for each pupil, totaling eight hundred seventy-six test scores. The data furnished by these tests are rather extensive. The purpose of this study is to compare the correlations between Reading Comprehension and Spelling, Reading Speed and Spelling and Reading Comprehension and Reading Speed at various school levels in several different schools.

This the concluding chapter contains two charts which portray a summary of the correlation coefficients. Table XV shows three correlation coefficients for the different school groups at the levels investigated. The first column of Table XV comprises the various tabulation tables from chapter two. The second column indicates the number of pupils in each group, the next three columns the correlation coefficients for the three different types of tables; Reading Comprehension and Spelling, Reading Speed and Spelling and Reading Comprehension as related to Reading Speed.

A comparison of the correlation coefficients reveals considerable difference in the coefficients for the different groups. The coefficient in column four of Table XV is the relationship between Reading Comprehension and Spelling. This relationship varies from a low of negative sixteen-hundredths to a high of ninety-eight-hundredths. A glance at this column reveals a positive relation--



ship. The positive relationship between the two tests does not change in any pattern from lower to higher levels. The correlation is no greater at the lower levels than at the higher levels. The correlation is different for each group studied. The mean of these correlations is fifty-five-hundredths as seen in Table XVI. This "mean" of the coefficients is found by weighting each correlation coefficient according to the number of pupils in each group. This relationship fifty-five-hundredths holds true for the entire study between Reading Comprehension and Spelling.

The fifth column in Table XV shows the relationship between Reading Speed and Spelling for all groups. Furthermore it should be pointed out each group differs from every other group. The correlation coefficients vary from a low of negative eighty-hundredths for a small group of four pupils at the eight and five-tenths level, to a high of ninety-seven-hundredths for a group of seventeen pupils at the five and four-tenths level. The correlation in Reading Speed and Spelling for the entire study at all levels is fifty-eight-hundredths. This relationship is a little higher than the relationship of Reading Comprehension to Spelling. Table XV shows that the relationships vary considerably from group to group with little regard for level of attainment. Some of the low correlations are found at the lower levels and some of the higher correlation coefficients appear at lower levels. Seventh and eighth grade levels also show a variation from group to group as great as the variation at the fourth and fifth grade levels.



The relationship of Reading Comprehension to Reading Speed is revealed in the last column of Table XV. It is not appreciably different from the two preceding columns. A fact that becomes apparent upon examination of this column is that the difference between the lower correlation and the higher correlation is not as great as the other two. The smallest coefficient is twenty-eight-hundredths while the highest is ninety-hundredths. The lowest correlation occurs in a small group of four pupils at the six and five-tenths level and the highest in a group of seven pupils at the seven and five-tenths level. The mean of all of the correlations for the groups studied is fifty-nine-hundredths. This column of coefficients may show a tendency for higher correlation at the lower levels but again the correlations do not occur in any definite pattern or sequence. The correlation coefficient varies from group to group with little regard for level of attainment.

TABLE XV

## RELATIONSHIP OF CORRELATIONS

Tables	Pupils per table	Level of pupils	Reading Comp. and Spelling	Reading Speed and Spelling	Reading Comp. and Reading Speed
Ia	17	5.4	0.80		
Ib	17	5.4		0.97	
Ic	17	5.4			0.75
IIa	17	6.4	0.36		
IIb	17	6.4		0.47	
IIc	17	6.4			0.65
IIIa	23	7.9	0.78		
IIIb	23	7.9		0.74	
IIIc	23	7.9			0.52
IVa	19	8.9	0.72		
IVb	19	8.9		0.77	
IVc	19	8.9			0.85
Va	34	5.2	0.43		
Vb	34	5.2		0.46	
Vc	34	5.2			0.68
VIa	40	6.2	0.63		
VIb	40	6.2		0.68	
VIc	40	6.2			0.74
VIIa	42	7.2	0.50		
VIIb	42	7.2		0.30	
VIIc	42	7.2			0.34
VIIIa	26	8.2	0.76		
VIIIb	26	8.2		0.72	
VIIIc	26	8.2			0.52
IXa	4	5.5	0.62		
	4	6.5	0.43		
	4	7.5	0.85		
	4	8.5	-0.16		
IXb	4	5.5		0.81	
	4	6.5		0.57	
	4	7.5		0.87	
	4	8.5		-0.80	
IXc	4	5.5			0.72
	4	6.5			0.28
	4	7.5			0.43
	4	8.5			0.57
Xa	4	4.5	0.98		
	5	7.5	0.73		
	4	8.5	0.85		
Xb	4	4.5		0.75	
	5	7.5		0.52	
	5	8.5		0.84	

TABLE XV (Continued)

Tables	Pupils per table	Level of pupils	Reading Comp. and Spelling	Reading Speed and Spelling	Reading Comp. and Reading Speed
Xc	4	4.5			0.85
	5	7.5			0.94
	4	8.5			0.88
XIa	8	4.5	0.52		
XIb	8	4.5		0.15	
XIc	8	4.5			0.41
XIIa	11	5.5	0.46		
XIIb	11	5.5		0.66	
XIIc	11	5.5			0.67
XIIIa	9	6.5	0.74		
XIIIb	9	6.5		0.73	
XIIIc	9	6.5			0.57
XIVa	7	7.5	0.31		
XIVb	7	7.5		0.60	
XIVc	7	7.5			0.90

TABLE XVI

## DERIVATION OF MEAN CORRELATION

Table	Number of Pupils	Correlation Coefficient			Product		
		a,	b,	c,	(a)	(b)	(c)
Ia	17	0.80			13.60		
Ib	17	0.97				16.40	
Ic	17	0.75					12.75
IIa	17	0.36			6.20		
IIb	17	0.47				8.00	
IIc	17	0.65					11.00
IIIa	23	0.78			17.90		
IIIb	23	0.74				17.00	
IIIc	23	0.52					12.00
IVa	19	0.72			13.70		
IVb	19	0.77				14.70	
IVc	19	0.85					16.10
Va	34	0.43			14.60		
Vb	34	0.46				15.70	
Vc	34	0.68					23.00
VIa	40	0.63			25.10		
VIb	40	0.68				27.20	
VIc	40	0.74					29.50
VIIa	42	0.50			21.00		
VIIb	42	0.30				12.60	
VIIc	42	0.34					14.3
VIIIa	26	0.76			19.70	1	
VIIIb	26	0.72				18.70	
VIIIc	26	0.52					13.50
IXa	4	0.62			2.45		
	4	0.43			1.72		
	4	0.85			3.40		
	4	-0.16			-6.40		
IXb	4	0.81				3.24	
	4	0.57				2.28	
	4	0.87				3.48	
	4	0.80				2.40	
IXc	4	0.72					2.88
	4	0.28					1.72
	4	0.43					1.12
	4	0.57					2.28
Xa	4	0.98			3.92		
	5	0.73			3.75		
	4	0.85			3.40		

TABLE XVI (Continued)

Table	Number of Pupils	Correlation Coefficient			Product		
		a,	b,	c	(a)	(b)	(c)
Xb	4	0.75				3.00	
	5	0.52				2.60	
	4	0.84				3.36	
Xc	4	0.85					3.40
	5	0.94					4.70
	4	0.88					3.52
XIa	8	0.52			4.16		
XIb	8	0.15				1.20	
XIc	8	0.41					3.28
XIIa	11	0.47			5.20		
XIIb	11	0.66				7.30	
XIIc	11	0.67					7.40
XIIIa	9	0.74			6.65		
XIIIb	9	0.73				6.55	
XIIIc	9	0.57					5.10
XIVa	7	0.31			2.17		
XIVb	7	0.60				4.2	
XIVc	7	0.90					6.3
	<u>876</u>				(a)		
	3	292					
					162.62		
		(a) 0.55					
						(b)	
		(b) 0.58				170.30	
					(c) 0.59		(c)
							173.85



## Summary

The writer undertook this study not to prove any specific fact but to satisfy a curiosity about the relationship of these abilities at the various levels. This study has not shown a consistently pronounced relationship for the various levels; rather it has shown that the relationship of these tests varies widely from group to group with small regard for the level. Some tendency has been noted for greater relationship between Reading Speed and Reading Comprehension at the lower levels but it is not possible to say that this is definitely established as fact.

It is the writer's opinion that the wide-spreading range of the correlations from group to group is due to the training the pupils received. This study indicates there is a definite place for drill in the skill subjects. One of the problems now confronting schools and teachers is to make this drill interesting and also productive of desired development.

The study indicates to the writer that teachers and school room conditions have a pronounced effect on the correlation of these modern school achievement, Reading and Spelling tests. Coefficients vary from school to school and from level to level with no definite pattern. Variations occur from group to group with little regard for school or school level. This same patternless variation was noted for levels of achievement. The writer's opinion is that a stimulating learning situation and an alert, analytically minded teacher with an ability to meet problems as they arise, are the

most important factors in the proper development of reading and spelling skills in a group.

The writer recommends a continuance of series drills in Reading and Spelling. The drills in these skill subjects should be made pleasant and painless if possible; but they are necessary.

## APPENDIX A

## Teacher's Check-off Sheet

Please check the following instructions prior to administering and scoring the Reading Comprehension, Reading Speed and the Spelling tests from the Modern School Achievement test battery.

Have you carefully read and understood the Manual of directions furnished with the tests? \_\_\_\_\_

Have you provided adequate time for instructions and administration of this test in your schedule? \_\_\_\_\_

Do you have a stop watch to carefully check the clock on the timed portion of the tests? \_\_\_\_\_

Have you decided how to distribute the papers quickly? \_\_\_\_\_

Have you carefully read the tests to be given? \_\_\_\_\_

The time allowed the Reading Speed test is either eight minutes or five minutes: which are you using? \_\_\_\_\_

Have you checked the spelling words to be pronounced? \_\_\_\_\_

Have you provided proper working conditions for the pupils? \_\_\_\_\_

Do you have extra pencils? \_\_\_\_\_

If you cut the keys in strips it makes for easier and more rapid grading. Have you done this? \_\_\_\_\_

Do you understand the use of the grade norm and age norm table at the end of each test? \_\_\_\_\_

Do you understand the profile chart on the front of the battery? \_\_\_\_\_

## APPENDIX B

## School Key

Alpha - - - - -	Wilson Elementary School, Wilson, Kansas.
Beta - - - - -	Wilson Junior High School, Wilson, Kansas.
Gamma - - - - -	Ellsworth Elementary School, Ellsworth, Kansas.
Delta - - - - -	Ellsworth Junior High School, Ellsworth, Kansas.
Epsilon - - - - -	Langley Elementary School, Langley, Kansas.
Zeta - - - - -	Trivoli Rural School, Geneseo, Kansas.
Eta - - - - -	Carneiro Elementary School, Carneiro, Kansas.
Theta - - - - -	Rural Schools of Ellsworth County - Buckeye Buffalo South Excelsior Walnut Grove Garfield. Ellsworth County, Kansas.



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